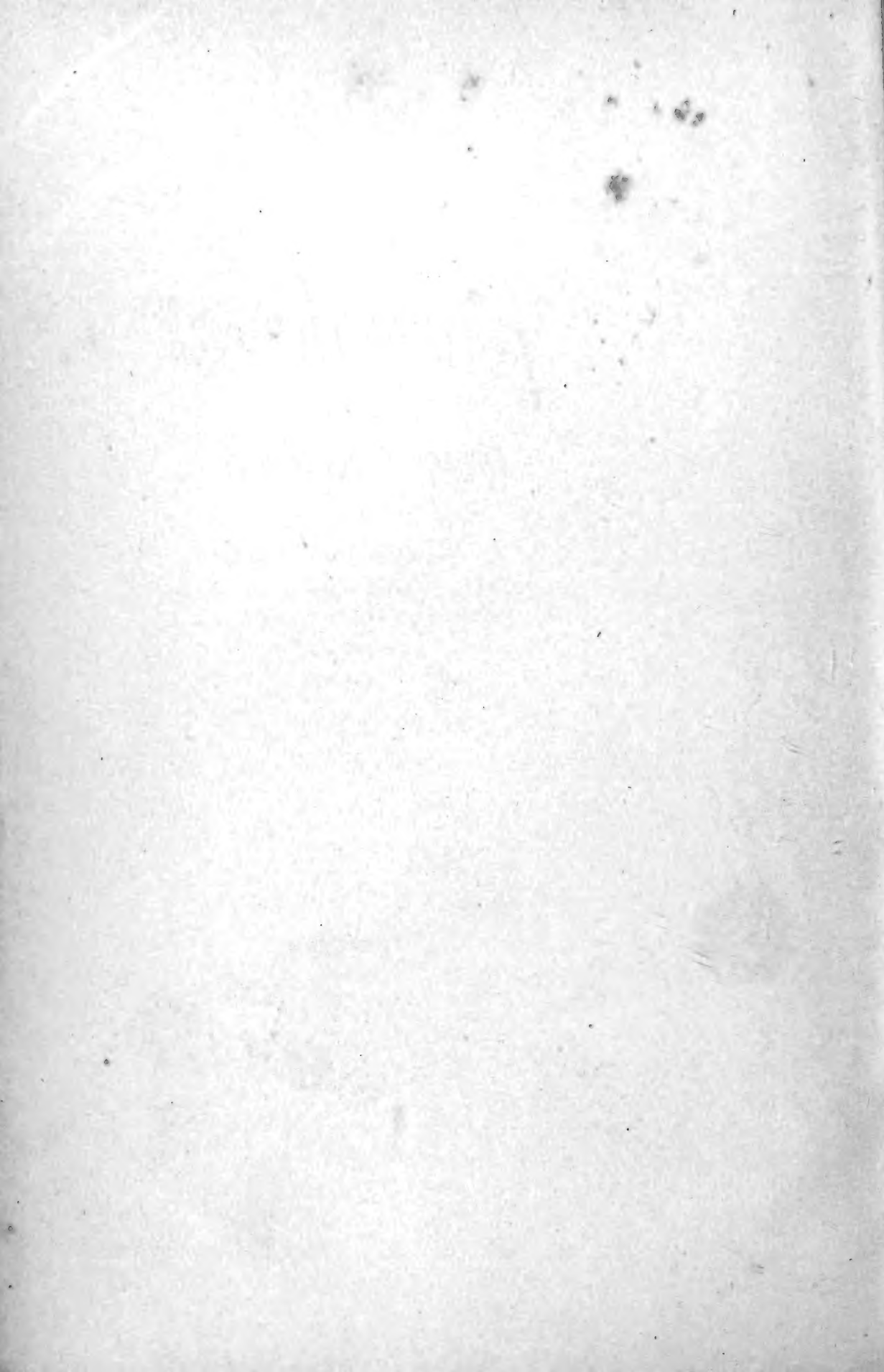






THE
INDIAN DUCKS
AND
THEIR ALLIES.



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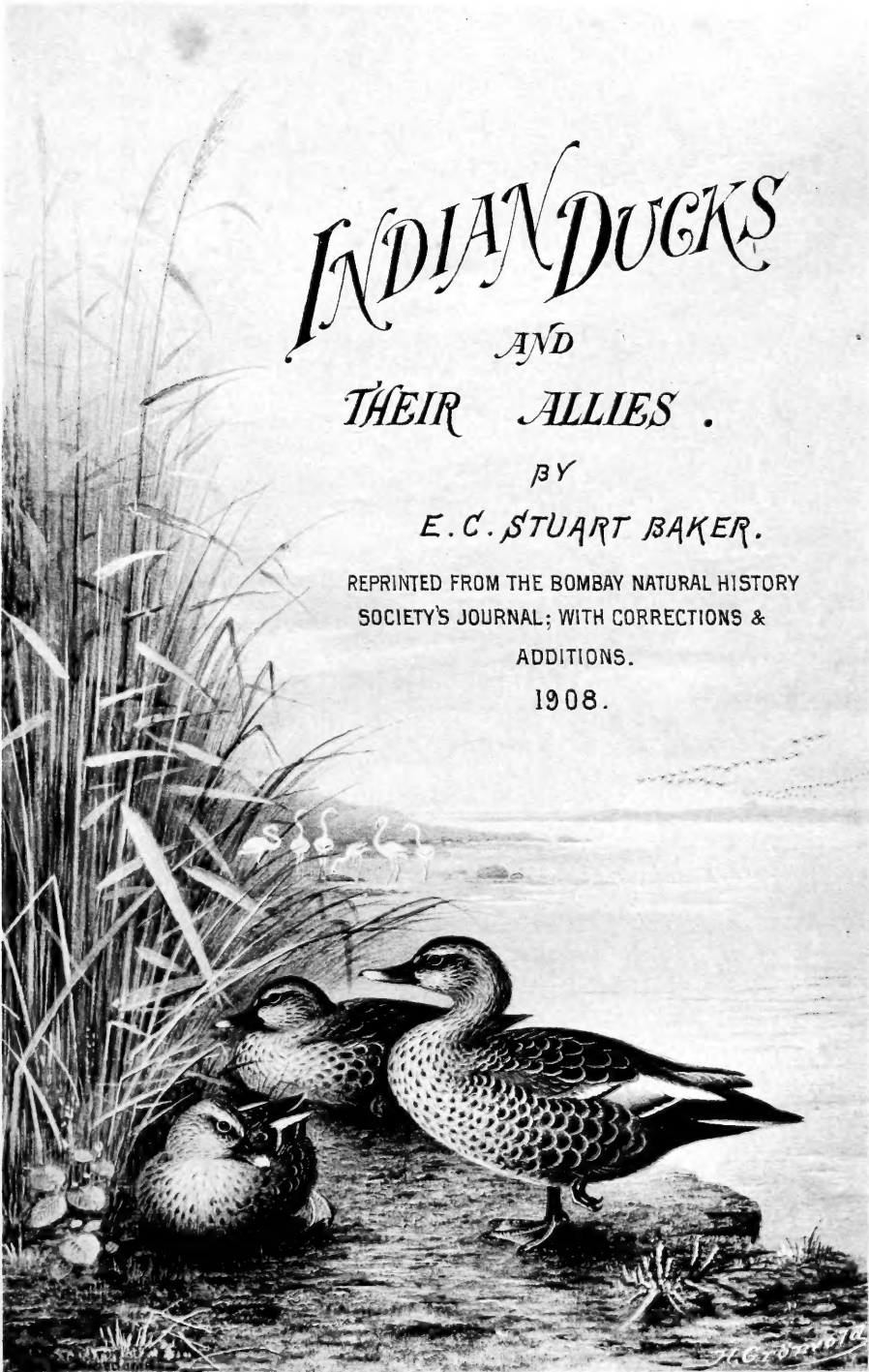
BY

E. C. STUART BAKER.

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1908.



THE
INDIAN DUCKS
AND
THEIR ALLIES.

BY
E. C. STUART BAKER, F.Z.S., M.B.O.U.

WITH 30 COLOURED PLATES
by H. Grönvold, G. E. Lodge, and J. G. Keulemans.

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SCOTT

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INTRODUCTION.

IN 1896 the Honorary Secretary of the Bombay Natural History Society induced me to write a series of articles on our Indian Chenomorphæ, and consequently the articles which commenced in Volume xi. of the 'Journal' of that Society made their appearance.

Since the publication of Hume and Marshall's 'Game-Birds,' no attempt has been made to collect the various notes which have from time to time been printed in the 'Asian,' 'The Indian Field,' and other sporting papers, as well as in the B. N. H. S. Journal itself, and it has been a matter of great difficulty—often an impossibility—for either sportsman or ornithologist to know what has already been recorded and what has not. Hence many interesting facts and finds were never recorded at all, and these articles were originally written as much with a view to elicit more information as to place on record in a compact form what had already been recorded.

That the *raison d'être* was a good one was shown by the immediate receipt by the Editors of the 'Journal' of numerous notes, giving both information that was new and correcting part that was old.

The present book aims at being a corrected, up-to-date edition of these papers, and incorporates, as far as possible, the additional information received since they were brought out.

There is still very ample room for further matter of interest, and still much about which we require confirmation or correction, notably in regard to the Geese to be found in India; and it is hoped that the readers of this volume will all try and add their quota to our knowledge.

The classification I have adopted is that of Salvadori, as given in volume xxvii. of the 'Catalogue of Birds in the British Museum'; and the keys to suborders, families, subfamilies, and genera, &c. are generally taken from that book, merely changed, so far as is necessary for Indian Ducks, by eliminating such matter as does not refer to them, with a few other minor alterations. The references made are principally to books which refer to the birds as Indian Birds, as a complete reference to synonyms and publications would not only have taken too much time, but would have proved of little interest to the general reader.

The principal references made are to the following works :—

| | |
|-------------------------|---|
| Cat. B. M. | ‘Catalogue of Birds in the British Museum.’ |
| Jerdon, B. I. | Jerdon’s ‘Birds of India.’ |
| Hume, Cat. | Hume’s ‘Catalogue of Indian Birds.’ |
| Str. Feath. | ‘Stray Feathers.’ |
| Jour. B. N. H. S. . . . | ‘Journal of the Bombay Natural History Society.’ |
| Fauna B. I. | ‘Fauna of British India, Birds.’ |
| Alphéraky, Geese . . . | Alphéraky’s ‘Geese of Europe and Asia.’ |
| B. of Bom. | ‘Birds of Bombay.’ |
| B. of Cey. | ‘Birds of Ceylon.’ |
| Hume & Mar. Game-B. . | Hume and Marshall’s ‘Game-Birds of India and Ceylon.’ |
| Oates, Game-B.. . . . | Oates’s ‘Game-Birds of British India and its Dependencies.’ |

Valuable notes have also been obtained from the pages of ‘The Asian’ and the ‘Indian Field.’

E. C. S. B.

Order CHENOMORPHÆ.

THE characteristics of this order, as defined by Huxley, are: palate desmognathous; young covered with down and able to run or swim in a few hours after hatching.

The order is divided into three suborders, but with the first of these—the “Palamedeæ, or Screamers”—we have nothing to do, as they are confined to the Neotropical Region and do not visit our part of the world.

The two remaining suborders are the Phœnicopteri, or Flamingoes, and the Anseres, or true Swans, Geese, and Ducks. There can be no chance of these two being confounded by anyone, as the two forms are so widely different.

Key to Suborders.

- A. Tarsus three times the length of femur; bill strongly bent downwards in the centre PHÆNICOPTERI.
- B. Tarsus about the same length as the femur; bill not bent but straight ANSERES.

The suborder Phœnicopteri contains but one family—the “Phœnicopteridæ,”—and that family (so far as we are concerned) but two genera, both of which contain but a single species.

Key to Genera.

- a. Upper mandible overlapping lower; throat naked . . . *Phœnicopterus*.
- b. Upper mandible not overlapping; throat feathered . . . *Phœnicornaias*.

Suborder PHÆNICOPTERI.

Family PHÆNICOPTERIDÆ.

(1) PHÆNICOPTERUS ROSEUS.

THE FLAMINGO.

Phœnicopterus roseus, *Salvadori, Cat. B. M.* xxvii, p. 12; *Jerdon, B. I.* iii, p. 775; *Hume, Cat.* no. 944; *id. Str. Feath.* i, p. 257; *Butler, ibid.* iv, p. 25; *Fairbank, ibid.* p. 264; *Butler, ibid.* v, p. 234; *Davids. & Wend. ibid.* vii, p. 92; *Murray, ibid.* p. 112; *Vidal, ibid.* ix, p. 91; *Butler, ibid.* p. 436; *Legge, B. of Cey.* p. 1092; *Reid, Str. Feath.* x, p. 78; *Davidson, ibid.* p. 325; *Hume, ibid.* p. 513; *Lester, Jour. B. N. H. S.* viii, p. 553; *id. ibid.* xi, p. 331; *Fleming, ibid.* xii, p. 216; *Blanford, Fauna B. I.* iv, p. 408.

Phœnicopterus antiquorum, *Hume, Str. Feath.* vii, p. 491; *Barnes, B. of Bom.* p. 392.

Phœnicopterus andersoni, *Hume, Str. Feath.* iii, p. 414.

Description. **Adult male.**—Whole plumage, with the exceptions noted, a beautiful rosy-white, the rose-colour much more developed on the tail and rather more on the head and neck; primary-coverts nearly or quite white, other wing-coverts and innermost secondaries light rose-red; primaries and outer secondaries black; under wing-coverts and axillaries scarlet; under median and primary-coverts black.

Orbital skin flesh-pink to bright red; irides lemon-yellow, pale yellow, or pale golden yellow (*Jerdon*); bill bright flesh-coloured, edge of mandible and terminal portion of bill black; legs and feet pinkish-red, claws black.

Length varies from 44 to 53 inches, wing 15·15 to 17·5, tail 6 to 7·5, tarsus about 13, bare part of the tibia 9, culmen 5·5 to 6·4, depth (of bill) at centre 1·5. (*Legge, B. of Ceylon.*)

Female.—Similar to the male, the rose-colour on head, neck, and back often less pronounced, but not always so. Length from 38 to 48 inches, wing 14·3 to 15·8, tail 5·5 to 6·8, tarsus about 10·5 to 11·5, bare tibia about 7, culmen 4·75 to 5·6.

Young.—Head, neck, and lower plumage white, more or less tinged with rosy-buff; back and wing-coverts ashy-buff, with dark shaft-stripes; the greater coverts more brown, but with pale tips soon wearing off; under wing-coverts and axillaries pale pink. Bill more dull than in adult; legs dark plumbeous.

Nestling.—White down, more or less tinged with grey, especially on the upper parts; down in texture like that on a young swan (*Dresser*). In the nestling the bill is perfectly straight, but soon assumes the normal shape.

Habitat.—Southern Europe (practically confined to the coast-line), Asia on the east and south-east, and the whole of Africa.

In India it is found more or less throughout the Continent, but I can find no record of its ever extending to Burma, and in Hume's collection there are none from the east of Bengal or Assam, though from the latter place there is in the British Museum Collection one skin marked "*a. Juv. sk. Assam*," obtained by McClelland. It is very common on the major part of the west coast, and extends quite down to Ceylon, where Legge states that it is seen in large numbers, both on the west and east coast. Thence it extends northwards, and is common in certain parts of Madras, but in Eastern Bengal is a decidedly rare bird. I have once seen it during the cold weather in the Sunderbands, and there are a few other recorded instances. In the widely-known and shot-over Chilka Lake, in Orissa, it is fairly frequently met with, though I hear less frequently and in smaller numbers than formerly, probably owing to the lake being more accessible to sportsmen nowadays than it used to be. Elsewhere in Bengal it is only a casual flock that is seen in the cold weather.

Legge seems to have thought that the Flamingo bred in Ceylon; but his ideas on this subject have never been confirmed, though it is more than possible that he was correct, as Mr. W. N. Fleming reports from Tuticorin that the Flamingo is fairly common throughout the district, and that a large flock, numbering some 300 birds, was still in the neighbourhood of that place in July 1898.

His Highness the Rao of Cutch is the only observer who has actually found a regular nesting-place of the Flamingo within Indian limits. In a letter to Mr. Lester he recorded that he had obtained some twenty eggs and two young from some place in the Runn of Cutch*.

Its principal breeding-places lie in Africa, and in Asia, in Arabia, and Persia, where they collect during the breeding-season in countless numbers. It also breeds in Spain, and is said to do so in the Rhone Delta. Hume and, after him, Barnes (*Jour. B. N. H. S.* vi, no. 3, p. 285) have commented on the curious and untidy habit these birds possess of dropping eggs about in a casual sort of manner, and in this way a good many have been found in India.

Other ornithologists have noted this habit, and it seems to be one common to the whole genus, as Barnes notes having obtained eggs thus which he considered belonged to the Lesser Flamingo.

* In January, 1894, II.II. the Rao of Cutch published, in the *Journal B. N. H. S.* xv, p. 706, a photograph and note on the nests and eggs of the Flamingo found in the Runn of Cutch.

Again, my friend Dr. E. Hartert, when visiting Bonaire, came across a colony of Flamingoes breeding ; and, though he could not approach near enough to obtain specimens and satisfy himself as to the species, he managed to visit the nesting-places, and he mentions that he obtained two fresh eggs which were lying in the water. Here the birds do not seem to have commenced breeding in earnest, and these eggs appear to have been casually dropped by them into the water, either before the nest had been made to receive them, or, more likely, before the bird felt inclined to commence incubation.

All kinds of Flamingoes, of which the nidification is known, breed in large communities, and seem to select much the same kind of country—sheets of water, wide in extent, but very shallow—as the sites in which to make their nests. These are inverted cones of mud, some foot or eighteen inches high, with the ends flattened off and a shallow cavity made in their summits. The nests are made close together, in many cases several in a group almost touching one another ; but of course their proximity to each other depends greatly on the depth of the water in which they are placed. Where this is variable the nests will be found in close clusters in the shallower parts, sometimes even on mud- or sand-banks above water-level. Where the water is all shallow—such as is found in the Rhone Delta, Spain, and elsewhere—the nests are scattered casually over a considerable extent of land. In Bonaire the land on which the birds had made their nests was not of mud or sand covered by water, but of coral. Hartert's own words describe the place vividly for us ; he says :—"The water was deep in places and the bottom very rough, consisting of very sharp corals and often of a deceitful crust of salt or saltpetre, under which the water was black and very deep. It required much care to avoid these places, and it took us over an hour to reach the nests. The nests themselves were flat plateaus standing out of the water from 2 to 6 inches, the water round them being apparently very shallow ; but it was often the fatal crust that caused this appearance, not the proper bottom. Many of the nests were close together, and some of them connected by dry ground. They were quite hard, so that one could stand on them, and almost the only way of getting along was to jump from one nest to another. The nest consisted of clay, hardened by the sun and penetrated and encrusted with salt and pieces of coral, with a distinct concavity in the centre."

The eggs, nearly invariably two in number, are long ovals, generally a good deal pointed at the ends. The colour of the true shell itself is a pale skim-milk blue ; but they are so encrusted with a dense chalky covering

that they appear, except where stained, to be pure white. They vary in size very considerably, but average about 3.6×2.3 inches.

Although so common in many parts of India, they are nowhere easy to get shots at, as they are extremely wary and cute birds. All over their habitat shyness seems to be their most prominent characteristic, and a close approach means the result of a stalk as carefully made as if the stalker was after the wildest kind of deer or antelope. A mistake made in attempting to conceal one's self, and the whole flock rise gracefully into the air and remove themselves into safety. Typically their flight is distinctly anserine, not perhaps exactly V-shape, but more in the form of a curved ribbon, the ends fluttering backwards and forwards as the birds, more especially those at the two extremes, alter their position. As a matter of fact, different writers have declared the bird's flight to vary very much. Some have said that in no respect does the flight of these birds resemble that of Ducks or Geese, but that, rising in one indiscriminate mass, they continue their flight as they rise; others, on the other hand, say that the formation they assume is nearly as regularly V-shaped as that adopted by Geese. Both are doubtless right, and it seems probable that when flying for a short distance only they adopt no special mode of flight, whereas on migration, or when moving to any distance, their formation is much as already described. Flying or wading they are a lovely sight, and, often as they have been described, no one has yet been able to do justice to their beauty. In December 1881, when passing through the Suez Canal, I observed more of these birds congregated together than I had ever considered possible, the banks in some places looking as if they were covered with a rosy snow, so dense were the birds packed. As the steamer gradually approached nearer and nearer, the snow melted on its outskirts into a crimson flame as the birds lifted their wings on taking flight, and in so doing exposed their scarlet coverts and axillaries. They made but little noise, the few calls that were heard being very similar to those of a wild goose, but not perhaps quite so discordant.

Writing of these birds, Mr. Eagle Clarke ('Ibis,' 1895, p. 200) says :—
"To witness the simultaneous unfolding of a thousand lovely crimson and black pinions under brilliant sunlight is a sight the recollection of which will not readily be effaced from our memories. The flock did not run forward to rise on the wing, but we noticed that they deliberately turned and faced a gentle breeze that was blowing and rose with perfect ease. We several times noticed the whole herd on the wing, but in no instance was any particular formation maintained."

They do not, however, at least in this country, always rise in the same manner, but both before rising and after alighting run forward some steps in a most ungainly manner.

They generally leave Northern India in May or June, though they have been seen in July, and the first few birds return in the end of September. From Southern as well as from Eastern India they migrate a good deal earlier as a rule, but they have been recorded in Ceylon in May, and, as mentioned above, from Tuticorin in July.

As might be expected from the very curious formation of the Flamingo's bill, their mode of feeding is rather remarkable. Bending down their long necks between their legs, and looking very much like bird acrobats preparing to stand on their heads, they invert their bills entirely, and use them as shovels in which to catch or collect their food. This they obtain by moving their heads backwards and forwards, or from side to side, and gently stirring up the mud. What they actually feed on is not at all well known and is one of the easy points still left for sportsmen to clear up, as it only means the examination of the internal economy of a few birds shot whilst they are in the act of feeding. We know that a considerable part of their diet is vegetarian, but they are also in all probability far more given to animal food than has generally been believed to be the case. Mr. Eagle Clarke, in his interesting article already referred to, came to the conclusion that the Flamingoes inhabiting the Rhone Delta existed almost entirely, if not quite, on a tiny Phyllopod, the brine-shrimp (*Artemia salina*), which he states is found there in marvellous abundance.

The value of the Flamingo when divested of its feathers and placed on the table has been variously estimated. Some have said that skinned and well cooked it is equal to almost any duck in flavour, whilst, though few abuse it as fishy or nasty in any way, many have said and written that the flesh is black, flavourless, and stringy. Probably, as with so many true Ducks, it depends greatly on the bird's diet and the length of time it has had to recover from its migratory flight. Doubtless birds just arrived, wanting food, and not very particular as to what they eat, are tough, and may acquire almost any taste. On the other hand, those that have had a good time to rest and gain flesh at the expense of muscle are tender, and those that have lived on a good diet are also well-flavoured.

(2) PHÆNICONAIAS MINOR.

THE LESSER FLAMINGO.

Phæniconaias minor, *Salvadori, Cat. B. M.* xxvii, p. 18.

Phænicopterus roseus, part., *Jerdon, B. I.* iii, p. 775.

Phænicopterus minor, *Hume, Str. Feath.* i, p. 31; *Adam, ibid.* p. 400, ii, p. 339; *Hume, ibid.* iv, p. 25; *Butler, ibid.* v, p. 234; *Hume, ibid.* viii, p. 114; *id. Cat.* no. 944 bis; *Butler, Str. Feath.* ix, p. 436; *Legge, B. of Cey.* p. 1093; *Hume, Str. Feath.* x, p. 513; *Barnes, B. of Bom.* p. 393; *Betham, Jour. B. N. H. S.* xii, p. 222; *Blanford, Fauna B. I.* iv, p. 410.

Description. **Adult male.**—General colour a bright pale pink; feathers at the base of the bill crimson; the longest scapularies and median wing-coverts crimson, the latter edged paler; other wing-coverts and the edges of the under wing-coverts rosy, the greater under wing-coverts and quills black; axillaries crimson; rectrices darker and with the outer webs tinged with crimson; under tail-coverts subtipped with a tinge of crimson. Some old males, perhaps during the breeding-season only, have the feathers of the back with crimson shaft-stripes.

Iris red minium; bill dark lake-red, with the tip black; feet red (*Antinori*). Length 34 to 38 inches, wing 13 to 14, tail about 5, culmen 4 to 4·25, tarsus 7·5 to 8·25.

Female.—Similar to the male, but smaller and paler, without the crimson scapularies, and with no crimson on the back or breast. Length about 32 to 34 inches, wing 12·2 to 13, tail about 5 or less, culmen about 4, tarsus about 7·25.

The **young** appears to be very like that of *Phænicopterus roseus*, but with a more rosy and less brown or buff tinge about it. Altogether a brighter, paler bird.

Habitat.—This bird is not spread over nearly so large an area as is the Common Flamingo. It appears to extend through South Africa on both coasts, but the extent of its range northwards on the West Coast is still doubtful. In the British Museum Catalogue, Salvadori marks its habitat Senegal with a “?”. In the East it is found on many parts of the coast as far north as Abyssinia and also in Madagascar. From N.E. Africa it extends to N.W. India, where, however, it is not found far south or far into the interior, nor is it found anywhere towards the east.

It has been recorded from various parts of India from the end of September up to the beginning of July, and cannot breed very far from

our shores. In all probability most of the birds which visit us breed on the west coast of the Red Sea, and if such is the case there would be nothing very remarkable in the shortness of the time elapsing between the departure of the last birds and the arrival of the earliest ones in the following September and October.

It is, however, also just possible that the Lesser Flamingo may breed with us, as Major Betham in 1899 obtained in Baroda eggs which I think were certainly those of a Flamingo, and probably those of the smaller species. Captain Cox, who took the eggs, wrote:—"Found at Badalpur, on the north bank of the Mahi at its mouth. No nest. Eggs deposited on a mound or small island in brackish water. Another clutch of six existed, but they were taken by Muggurs."

These eggs were, if I remember rightly, sent to me to look at, and differed from other Flamingoes' eggs in having practically none of the chalky covering such as is usually found on them.

It seems likely that none of the various species of Flamingoes migrate to any great distance, and some, as we know, are practically permanent residents of the countries they inhabit. In vol. vi. of 'Stray Feathers' Hume has the following note on this beautiful bird:—"We know but little yet of this species. I ascertained that it occurred in Scind in the early part of the hot weather. Captain Feilden shot it in July in Secunderabad. It has been seen on the great Majuffgarh Jheel, twenty miles north of Delhi, during the cold season; and Mr. Adams has given us full accounts of its occurrence in great numbers, but irregularly, at the Sambhar Lake. We have no record of its occurrence in any other part of Jodhpore, or in Kutch, or in Kathiawar."

In habits, the Lesser Flamingo seems to differ in no way from its larger cousin, and is just as wary a bird as the latter. It is on the Sambhar Lake alone, perhaps, that it has, as a species by itself, been observed in any number in India. There it was found to be an extremely wide-awake bird. Even in the middle of the day it rested well away from all cover and was most difficult of approach. It feeds in the manner usual to the genus—that is to say in groups, the formation of which is generally a long line. This line slowly advances through the shallow water, the long necks of the birds covering a radius of some two feet or so, as heads downwards they shovel and rake about in all directions in search of food.

The only note besides Betham's I can find regarding the nidification of this Flamingo is that made in the Journal of the B. N. H. S. by the

late E. Barnes, who says that he obtained an egg from a fisherman, who found it on a sand-bank in the Indus. This egg, from its very small size, he believed to have belonged to the present species, and he adds that he examined the huge series of Flamingo eggs in the Frere Hall Museum, Karachi, but failed to detect any so small. There is no reason why the egg should not belong to *P. minor*, and Barnes was so careful in the statements he made, that this egg is more likely to belong to that bird than to *P. roseus*.

Suborder ANSERES.

Family ANATIDÆ.

Key to Subfamilies.

- A. Hind toes not lobed.
 - a. Neck as long as, or longer than, the body 1. CYGNINÆ.
 - b. Neck not as long as body.
 - a'. Hind toe rather long, tail-feathers rather long.
Upper parts glossy 2. PLECTROPTERINÆ.
 - b'. Hind toe moderate, tail-feathers rather short. Upper
parts not glossy. No cere 3. ANSERINÆ.
- B. Hind toe very narrowly lobed.
 - c. Bill short and goose-like 4. CHENONETTINÆ.
 - d. Bill rather flat and broad 5. ANATINÆ.
- C. Hind toe broadly lobed.
 - e. Bill more or less depressed.
 - c'. Tail-feathers normal 6. FULIGULINÆ.
 - d'. Tail-feathers narrow and very stiff 7. ERISMATURINÆ.
 - f. Bill more or less compressed, never depressed 8. MERGINÆ.

Subfamily CYGNINÆ.

This subfamily contains but one genus (*Cygnus*) which is represented in India, the other two genera *Chenopsis* and *Coscoroba* being confined to Australia and South America only.

The Swans are so easily identified by the veriest beginner, that it is not necessary to add anything to the above key, though there are a good many other distinctions they possess, besides the one named, interesting only from a scientific point of view.

Key to Species.

- A. No knob at the base of the culmen; lores yellow.
 - a. Black apical portion of the bill generally does not extend above the nostrils, and on the sides only reaches halfway to the gape. Culmen exceeds 4 inches *C. musicus*.

- b.* Black apical portion of the bill extends much above the nostrils and backwards to the gape. Culmen under 4 inches *C. bewicki*.
- B.* Culmen with a prominent knob at the base; lores black . . *C. olor*.

Although *C. bewicki* has now been eliminated from the list of Indian birds, the key is allowed to stand as it is in the hope that it may be of use hereafter.

(3) **CYGNUS MUSICUS.****THE WHOOPER.**

Cygnus musicus, *Salvadori, Cat. B. M.* xxvii, p. 26; *Hume & Mar. Game-B.* iii, p. 4; *Blanford, Jour. B. N. H. S.* xi, p. 306; *Aitken, ibid.* xiii, p. 362; *Crerar, ibid.* xv, p. 716; *Blanford, Fauna B. I.* iv, p. 414; *Oates, Game-B.* ii, p. 35.

Cygnus ferus, *Hume, Str. Feath.* vii, pp. 106, 107, 464; viii, p. 114; *id. Cat.* no. 944 quat.

Description. **Adult male and female.**—Pure white, rarely showing a slight rufous-grey wash on the feathers of the head; this is probably due to immaturity.

Young.—Wholly a light brownish-grey.

Nestling.—White down.

Adult male.—Length 60 inches; expanse 95; wing 25·75; tail 7·5; bill along culmen (including bare space on forehead) 4·5, from tip to eye 5·16; tarsus 4·16. Weight 19 lbs. (*Hume*.) Total length about 5 feet; wing 25·5 inches, tail 8·5, culmen 4·2, tarsus 4·2. (*Salvadori*.)

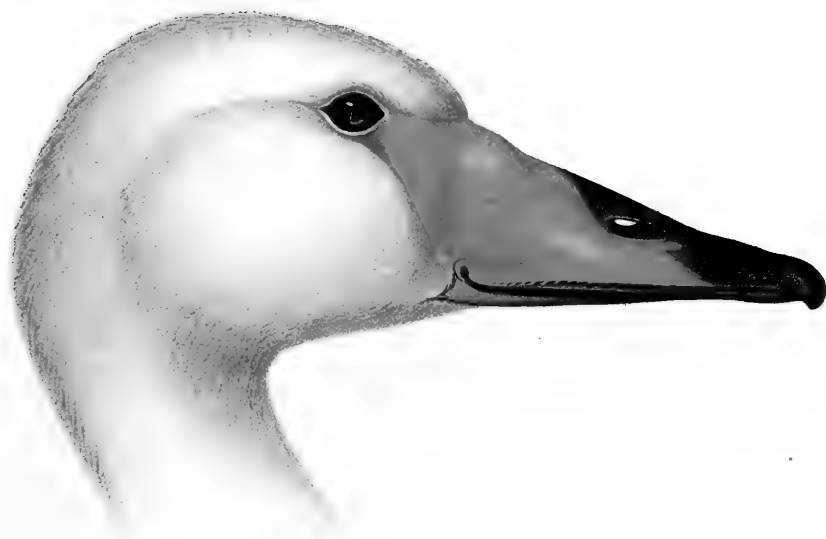
Female.—Length 52 inches; expanse 85; wing 23·5; tail 7·5; bill as above 4·5, to eye 4·84; tarsus 4. Weight 16·5 lbs. (*Hume*.)

A young bird killed in March (in India?) measured 44 inches in length and weighed 8·25 lbs. (*Hume*.)

The young have the bill a dull flesh-colour, with the tip and margins black, which extends with advancing age until it leaves only an orange band across the nostrils, and the bases of both mandibles very pale yellowish-green or greenish-white. In the adult bird the bill has the terminal half black, the base and margins of the maxilla yellow; legs, toes, and webs black; irides deep hazel.

For very many years the only occurrence of this Swan in India was that recorded by Hodgson. Of this specimen a drawing was made by Hodgson, and the head and feet are in the British Museum, labelled *C. bewicki*. The latter have been carefully examined by Blanford and other authorities, and are now definitely accepted as being those of *Cygnus musicus*, and *C. bewicki* has therefore been expunged from our Indian fauna.

Since my article was written for the Journal of the B. N. H. S. there have been two more instances of the Whooper being obtained in India. The first was obtained by General W. Osborn on the 6th January, 1900, on the River Beas in the Hushiapur district of the Punjab, and its occurrence was reported in the 'Asian' as follows:—



1.



2.

1, H. Gronvold. 2. J. G. Keulemans del.

J. Green, Chromo.

1. THE WHOOPER.
Cygnus musicus.
2. THE MUTE SWAN.
Cygnus olor.

“While duck-shooting with a friend on the river Beas on the 6th January last, at a point just opposite Tulwara in the Hushiapur district, we saw four wild swans on the opposite side of the river. As there was no means of crossing, and the swans were too far and too wary to be reached even by my four-bore duck-gun, we sent back to camp for our .303 rifles, and with these weapons we managed to secure one of the four. When we recovered the bird we found it to be undoubtedly a ‘Whooper’ (*Cygnus musicus*), and its weight and measurements were as follows:—Weight 12 lbs. (?). Length from tip of bill to end of tail 4 feet 8½ inches, spread of wing 7 feet 5 inches.”

General Osborn *in epistolâ* added:—“The bird was only winged and swam about in the river for a considerable time before I could get a man to secure it; and as long as its companions remained in sight it continued to utter its long, loud, musical trumpet-call.”

The second record is that of Mr. J. Crerar, who shot a young bird of this species on a sheet of water known as Changra Dhand, in the Rampur Taluka, Larkana District, Sind, on the 31st January, 1904. This bird seems to have been solitary. Its skin has been presented by the shooter to the Bombay Museum.

Mr. J. W. Nicol Cumming obtained a fine specimen of the Whooper on the Farrah Rud on the 13th January, 1905, which had been killed on the Hamun-i-Sabari, on which it was reported numerous. The young are also said to be obtained in Seistan, so that, breeding so near India as this, we may hope to have many more records of its visiting our borders.

It extends practically over the whole of Northern Europe and Asia, extending to Japan and Greenland. In the winter it works south and visits much of Southern Europe, and in Asia has been recorded from Japan, South Yezo, Shanghai, Corea, Teheran, &c. On the Caspian it is very common in the winter and a few even remain to breed about its northern shores. About Corea it cannot be said to be rare in winter, for Mr. C. W. Campbell remarks: “In mild seasons I have noticed that a number of these swans pass the winter in a bend of the Han River, about three miles south of Soul.” In Iceland this was the only species of swan observed by Messrs. H. J. and C. E. Pearson, and in the ‘Ibis’ (1895, p. 243) they have the following note:—“Eggs were taken on June 20th and 28th, but the weather among the hills had been so bad this spring that several pairs were only commencing to prepare their nests about the latter date. We afterwards saw a clutch of seven eggs, which had been recently taken. Although these birds sometimes breed on islands

in the inhabited districts, it is little use to look for their eggs before you pass the 'last farm,' as they are generally taken either to eat or sell."

They also breed, but not, I believe, in great numbers, in South Greenland and in the north of Europe, and in Asia as far south as it is allowed by humanity—which is, of course, equivalent to slaughter.

All Swans seem to have the same breeding-habits. They make huge nests of rushes, grass, and any other vegetable material which is soft enough and easily moved; the preference is naturally given to such kind as is most handy. These are placed on the borders of marshes and swamps, often on islands situated in such places, sometimes actually in shallow water. More rarely they are placed by rivers, either up on the banks removed from the river itself, or in amongst the rank herbage bordering its course. When placed actually in water, the swans are said to raise their nests when it happens to rise and threatens to swamp them; and as tame swans do this, it is in all probability true that the wild ones do also. They lay from four to eight eggs, but in captivity often lay a larger number still. I have known a tame duck-swan lay fourteen eggs in a sitting. According to Morris, the smaller number of eggs laid are generally those of young birds, whilst the greater number of eggs are laid by those fully adult. I should think, however, judging by analogy, that though birds of the first season may lay fewer eggs than is normal, it is, on the other hand, almost certain that very old birds lay but small clutches.

Their breeding-season naturally varies very much according to the country they breed in. In the warmer—less cold would, perhaps, be a more correct expression—countries they commence breeding in May, but in Iceland, Greenland, &c. they are normally at least a month later, and August even may still find some of the latest birds laying.

Incubation lasts from 35 to 40 days, 37 being the most usual number of days for a swan to sit, though eggs of the same clutch may vary considerably in this respect.

Swans are very good parents and look after their young with the greatest care, the duck-bird often carrying her young ones about on her back whenever they want a rest.

In the 'Asian' of the 5th March the following curious note was published; and from the habitat of the swans mentioned, concerning which the note was written, it probably relates to *C. musicus*:—

"A Scandinavian writer, cited by the 'Zoologist,' has recently described a curious method of capturing swans much employed for centuries past in the north-west of Iceland. The swans, after moulting in autumn, leave

the interior in order to reach the coast. The inhabitants of the coast and their dogs are prepared, and, when the birds approach, begin to make as much noise as they can by shouting, striking boards with stones, and making as much of a racket as possible. This noise has a powerful effect on the young swans, which, terrified and distracted, and not knowing which way to turn their heads, allow themselves to fall to the ground, when they are captured without any difficulty.' Fear is likewise exploited in South America for the capturing of another species of swan by the Guachos, 'who, when they perceive a flock, run towards it, keeping themselves leeward to the wind, and concealing themselves. When they get close enough to the flock they spur up their horses and rush upon the birds with loud shouts. The swans, seized with fear, are unable to take flight, and allow themselves to be seized and slaughtered upon the spot.'"

In spite of the beautiful novelty of this way of catching swans, Indian sportsmen had better keep to that dear old-fashioned weapon, the "D.B." breechloader, and leave the attempt to put salt on the ducks' tails to Guachos, who can "run towards" a flock on horseback by "keeping leeward to the wind" and then "spurring up their horses," or to Icelanders, who are sufficiently distracting in their ways to confuse even the wily swan.

The Whooper is said to have not nearly as stately or as graceful a carriage as the Common Swan, holding its neck in a much stiffer and more erect position than does that bird, which, of course, gives it a more jerky carriage when swimming. This trait may prove of use to the future sportsman or ornithologist, who sees swans at too great a distance to examine their bills, and thus to ascertain to what particular species they belong.

(4) **CYGNUS OLOR.**

THE MUTE SWAN.

Cygnus olor, *Salvadori*, *Cat. B. M.* xxvii, p. 35; *Scully*, *Str. Feath.* iv, p. 197; *Blanford*, *ibid.* vii, p. 99; *Hume*, *ibid.* pp. 101, 106; *Hume & Mar.* *Game-B.* iii, p. 41; *Macmullen*, *Jour. B. N. H. S.* xiv, p. 156; *Blanford*, *Fauna B. I.* iv, p. 413; *Oates*, *Game-B.* ii, p. 26.

Cygnus unwini, *Blanford*, *Str. Feath.* vii, p. 100; *Hume*, *ibid.* p. 104.

Cygnus sp., *Hume*, *Str. Feath.* iv, p. 33; vii, p. 104.

Description. **Adult male.**—The whole plumage white, with the exception of the lores, which are black. Bill, the tubercle, base of maxilla, nostrils, margins, and nail black, remainder of maxilla reddish-horny; mandible wholly black; legs and feet dull black; irides rich brown.

Total length from 4·7 to 5·2 feet; wing 23 to 27 inches, tail about 10, culmen 4·2, tarsus about 4·5, but varying very much.

Weight about 15 to 20 lbs.; in a wild state rarely running up to 24 or 25 lbs.; in a tame state birds of 30 lbs. may be met with, and heavier birds even than this have been recorded.

Female.—Smaller than the male, and with the tubercle at the base of the bill less developed. The neck is also more developed and the bird “swims deeper in the water” (*Hume*). In the majority of the birds of this order the duck swims deeper than the drake, the reason of this being the different anatomical structure of the sexes.

Length 4·2 to 4·8 feet; wing 18 to 22 inches, tail under 10, culmen about 4, tarsus about 4·3.

Young.—“Plumage almost a sooty-grey; neck and under surface of the body lighter in colour; beak lead-colour; nostrils and the basal marginal line black.” (*Salvadori*.)

Cygnets.—“Covered with soft brownish or dull ashy-grey down, which on the lower throat and breast becomes much paler, almost white; bill and legs lead-grey.” (*Salvadori*.)

In India the specimens of the Mute Swan obtained are nearly all young ones, and these have the tubercle on the bill very slightly or not at all developed, but the feathers of the forehead at the base of the bill are prolonged to a point “slightly truncated” (*Hume*).

The range of this bird does not seem to be nearly as extensive as that of the previous bird and *Cygnus bewicki*, that is to say in a truly feral state. As a domestic bird it is, of course, almost cosmopolitan. In the summer,

in its wild state, it is said to be found throughout the central and south-eastern parts of Europe ; but it is more rare in the north, and is practically absent from the extreme north and the west. It has only twice been recorded from Heligoland—once in 1881, and once many years previous to that, both times in the winter. It extends throughout Prussia and Russia. Writing of Eastern Prussia, Hartert says : “ *C. olor* breeds in small numbers in some of the greater lakes.” Breeding-places are recorded in West Turkestan and Siberia, and also in Denmark, Norway, and Sweden, and I believe in Greece and parts of the valley of the Danube. In Asia it is found in West Siberia and adjoining countries. In winter it extends its range to Northern Africa, but does not seem to work far to the west, through Egypt, Arabia, Asia Minor, and frequently into Afghanistan. North-west India is, however, the extreme south-east point to which it has penetrated, not being on record as yet as having been obtained in China and further east.

In India it is only a rare winter visitor, except in very severe winters, when numerous specimens may sometimes be met with. As regards its occurrence within our limits, with the exception of comparatively recent records, I can merely quote what has already been written several times, and pillage Hume and Marshall’s ‘Game-Birds’ *en bloc* for the purpose, with many apologies to the authors.

Hume gives it as a pretty regular, but rather rare, visitor to the Peshawar and Hazara districts, and as a straggler to Kohat, Rawalpindi, and the Trans-Indus portion of Scind.

The first bird recorded in India was shot by W. Mahomed Umar Khan, and placed in the Peshawar Museum, from which place it eventually came into Hume’s possession. This bird may be the one now in the British Museum, marked “2. Im. sk. Peshawar, June,” only that W. Mahomed Umar Khan got his bird in January, not June. Regarding this bird, Hume got the following letter, which he printed *extenso* in ‘Game-Birds’ and which is again produced here, together with other letters from various sportsmen who have had the luck to obtain swans :—

“In the month of January, 1857, I shot this swan in the Peshawar district in the Shah Alum river, about a mile and a half on this side of the Kabul River. Neither before nor after have I seen other swans, but a few years after I killed it, I heard from the shikaries of Hashtnagar (also in the Peshawar district) that they had recently seen five of these birds in Agra (?) village lake, in this same district, but had failed to shoot any.”

The next birds Hume got were a pair of young birds received from Captain Unwin in 1871. These birds were for some time thought to be a new species, and were called *Cygnus unwini*, after Captain Unwin who shot them, and who wrote to Hume about them in the letter here given :—

“To-day, while duck-shooting on the Jubbee stream on the border of the Hazara and Rawalpindi districts, during a short halt for breakfast on the banks of the nullah, I was attracted by seeing two large white birds flying over the stream, some 250 yards lower down. The Jubbee here has a wide stony bed, with a small stream in the centre forming occasional pools, in one of which the birds seemed inclined to alight. Changing their intention, however, they came flying up, and passed me at a distance of about 60 yards ; to my surprise and delight, I recognized in them most undoubted wild swans. Firing with loose shot at that distance was useless, so I watched in the hope that they would settle in some of the pools higher up in the stream and thereby afford a stalk, but they continued their slow heavy flight until I lost sight of them in the distance. Concluding that they would not stop until they reached the Indus some 20 miles off, I was returning to my breakfast, a sadder and wiser man, when, in taking a last look in this direction, I saw them returning. I hastily got into the centre of the nullah, in their line of flight, and as they arose slightly, to avoid me, fired both barrels, No. 3 shot, at the leader. She (for it proved to be the female) staggered but went on, slowly sinking, until she settled in a large pool about 400 yards off, accompanied by her mate, who alighted close behind her.

“The pool, being commanded by a high bank, offered an easy stalk, and getting round into a favourable position, I found the swans about 20 yards from me. A crowd of Gadwall (*C. streperus*), which was close by, took flight on seeing me, but the swan nobly stuck by his mate, and paid dearly for his fidelity, and shortly I had the satisfaction of landing them both.

“The villagers, who collected the birds, gave the local name as ‘Penr’ (pronounced with a nasal *n*), and told me that the birds came there occasionally once in every three or four years.”

In 1878 other three swans were obtained in the Sewan district, Scind, somewhere near the Manchur Lake, by Mr. E. H. Watson, after he had previously seen some birds of the same species in the lake itself, doubtless the same flock, from which he afterwards obtained specimens.

Besides these, a good number seem to have been seen, and in four cases

a pair were shot ; but in no cases were the skins preserved, though Hume seems to have been satisfied that they were *C. olor*. Mr. Hill, of the Rifles, also shot a swan, which was said to be *C. olor*, but again the skin was not preserved.

Mr. Watson writes of his birds :—"I shot three swans this morning. As far as I can judge they are identical with the Indian species (that is, the tame swan). There were five on a small 'dhan' or tank, about half a mile or less in length, by a quarter of a mile or less in breadth. I went to shoot ducks, but seeing these large white birds, I went after them, and recognised them to be the same as those I had seen on the Manchar. They let a boat get pretty close and I shot one. The other four flew round the tank a few times, and then settled on it again. I went up in the boat and fired again, but without effect. They flew round and then settled again. The third time I shot another; the remaining three again flew round and settled, and the fourth time I fired I did not kill. Exactly the same thing happened the fifth time, the birds flew round and settled close to me, and I shot a third. The remaining two flew a little distance and settled ; but I thought it would be a pity to kill them. I considered that there would be more than I could skin myself (for I have no one to do it for me), so I began to shoot ducks, and then the remaining swans flew by me, one on the right, and one on the left, so that I could have easily knocked them over with small shots. However, I spared them, and came home with three."

Everyone will notice how remarkably tame and confiding the above swans were. Were it not for the date on which they were shot, the 12th February, one would have imagined that they were birds exhausted by their flight on migration : as it is, there is no explanation beyond the fact that the birds were young in age, and even younger in experience. In the same year as that in which Mr. Watson obtained the swans—but, strange to say, in the month of June—three more birds were seen, of which two were shot, one by Major Waterfield, which was identified as *Cygnus olor*, and one by Mr. D. B. Sinclair. This last, most unfortunately, went bad before it could be examined by anyone competent to decide the species, and though, in all probability, the bird was *C. olor*, the point must remain in obscurity. Even later than this, swans were seen in that year, for, on the 7th July, Mr. Sinclair wrote to Mr. Hume to tell him that there was still one more swan on the Gulabad jhil, a body of water some two miles north-east of Peshawar. Since 1878, we have had no further records until 1900, when the appearance of numerous birds of this species is recorded

by Mr. Macmullen, whose articles in the 'Bombay Journal' (*in loc. cit.*) I reproduce in full :—

"During the months of January, February, and March, 1900, it was extremely cold in Sind, and several swans were seen, of which some were shot and some were captured.

"January 10th.—Nine swans were seen on the Hubb River, about 15 miles from Karachi. Two were killed by Mr. Jones, of the Indo-European Telegraph Department, who says the birds were very tame. One was killed with a rifle, and one with a shot-gun; the remaining seven birds did not appear to be much alarmed, for they flew some five hundred yards down the stream and settled again.

"Saturday, 13th January, 1900.—Eight swans flew over the tennis courts at Kotri, about one hundred yards off and about thirty yards high, at about 5.30 P.M. Several people were on the courts at the time; I could clearly see what the birds were, and called out 'Swans.'

"One of these birds came to grief against the telegraph wires, which here span the Indus, and was captured by Mr. Cumming, platelayer, who says that the bird was unable to rise off the ground, but ran at great speed three or four times, one hundred yards at a go, before it was killed by his coolies. The bird is stuffed (after a fashion) by the taxidermist of the Karachi Museum. It is a young bird of a sooty-white colour, and fairly long buff-coloured crest at the back of its head.

"February 14th.—Two swans—adult birds—were captured in ordinary duck-nets, at Sita Road Station: one died soon after its capture; the other bird I procured, and presented to the Karachi Gardens on the 6th February, 1901. This bird is still living (8th June, 1901).

"Some time early in February 1900, eight swans were seen at Boston on the Beluchistan frontier—four of these birds were shot, three dead and one winged; this latter bird is still alive, I believe. Mr. Matthews, platelayer, who shot them, says that it was bitterly cold at the time, and the birds were fairly tame.

"About the middle of March a swan was shot on the Munchar Lake by Mr. Cross, of the I.C.S., who says the bird was among a lot of duck, and fairly easy of approach.

"At the end of March ten swans were seen for three consecutive days on the Laki Lake. On the third day Mr. Vivien, platelayer, fired nine shots at them before they flew away. He used an ordinary 12-bore gun and No. 1 shot. He says that the birds were about a hundred yards away on the water and that he could hear the shots rattle against them.

"On 27th April one was shot by Mr. Wragge, platelayer, Meting. The river Indus runs about twelve miles from Meting. The bird was seated on a small sand-drift close to the bank. No. 2 shot at about 40 yards."

In addition to the above, there is a letter from Major-General Egerton, 1900, which records his having seen "a herd of eight swans of the mute variety at Kundian on the opposite side of the Indus"; and he adds: "Swans have been most unusually common this year in the Punjab, and several specimens have been secured in the Peshawar district and near Dera Ismail Khan."

This swan is said to breed gregariously, so it is to be presumed that it is not so pugnacious a bird in its feral as in its domestic state. Certain birds which belonged to Shakespeare's birthplace used to breed every year on the River Avon; but these showed the keenest jealousy of one another, and no approach of any strange swan was allowed within 200 yards of the nest by the owners thereof. It must be added that their ire was roused equally as much by the advent of humanity as that of their own kind. Boats were always greeted by the most war-like demonstrations and canoes not unfrequently upset, their occupants being more or less damaged by the furious birds, which made for them in the water, attempting to beat them under with their wings. These swans, like most others of the species, generally chose small islands well covered with bushes and rushes as sites for their nests—most often selecting a mass of rushes close to the river's edge in which to place it. Now and then, but not often, one might be found well inland amongst the bushes. The site taken up by the birds was not always above flood-level, and whenever the river rose they were forced to add largely both to the height and bulk of the nest, in order that the water should not wash away the eggs. They appeared to have no difficulty in working the materials under their eggs, nor have I ever heard of their upsetting them when so employed. Occasionally, however, when much frightened, or when rushing to repel an enemy, they sweep an egg or two into the water. They sometimes make use of an immense amount of material in constructing their nests, and one such—in the Avon above mentioned—must have contained a couple of cartloads of weeds. What it was originally I do not know, but when I first saw it, after a small flood, the diameter of the base must have been ten or twelve feet, and it was close on six feet high.

Subfamily PLECTROPTERINÆ.

Key to Genera.

- a.* A large fleshy comb at the base of the culmen in the male 1. *Sarcidiornis*.
- b.* No comb at the base of the culmen.
 - a'*. Bill at least equal to double the length at base.
 - a''*. Outline of the loreal feathering at the base of the bill with the convexity anteriorly 2. *Asarcornis*.
 - b''*. Outline of loreal feathering straight and inclined backwards 3. *Rhodonessa*.
 - b'*. Bill not so long as double the length at base; head not crested 4. *Nettapus*.
 - a'''*. Head crested 5. *Æx*.

Another key is as follows, and this may prove simpler to sportsmen :—

- a.* Wing over 10 inches.
 - a'*. Head principally black and white.
 - a''*. Comb at base of bill 1. *Sarcidiornis* ♂.
 - b''*. No comb at base of bill.
 - a'''*. Upper back black; lower plumage nearly white *Sarcidiornis* ♀.
 - b'''*. Upper back olive-brown; lower plumage chestnut-brown 2. *Asarcornis*.
 - b'*. Head pink; bright in ♂, dull in ♀ 3. *Rhodonessa*.
- b.* Wing under 9 inches.
 - c'*. Primaries not edged silver-grey 4. *Nettapus*.
 - d'*. Primaries edged with silver-grey 5. *Æx*.

As already enumerated, the distinguishing features of this subfamily are : rather long hind toe, not lobed; a neck shorter than the body; and with, especially in the male, more or less glossy upper plumage combined with comparatively long tail-feathers.

In India five genera are represented, although each by a single species only. Indeed two of the five genera possess but one species, and are peculiar to India and adjacent countries, these two being *Asarcornis* and *Rhodonessa*,





THE NUKHTA OR COMB-DUCK.
Sarcidiornis melanonota.

Genus SARCIDIORNIS.

This genus is separated from the other Indian genera by the presence of a spur on the shoulders of the wing. This feature was formerly considered of sufficient importance to constitute as a subfamily by themselves such birds as possessed it, and the Plectropterinæ are designated by Jerdon "Spurred Geese." Later systematists have, however, added others to this subfamily, which now contains eight genera, many of which are not spurred.

(5) SARCIDIORNIS MELANONOTA.

THE NUKHTA OR COMB-DUCK.

Sarkidiornis melanonotus, *Jerdon*, *B. I.* iii, p. 785; *Hume*, *Nests & Eggs*, p. 636; *Butler & Hume*, *Str. Feath.* iv, p. 27; *Hume & Davis*, *ibid.* v, p. 486; *Hume*, *ibid.* vii, p. 507.

Sarcidiornis melanonotus, *Hume*, *Str. Feath.* vii, p. 491; *id. ibid.* viii, p. 114; *id. Cat.* no. 950; *Hume & Mar.* *Game-B.* iii, p. 92; *Parker*, *Str. Feath.* ix, p. 486; *Legge*, *B. of Cey.* p. 1063; *Oates*, *Str. Feath.* x, p. 245; *Hume*, *Nest & Eggs* (*Oates ed.*), iii, p. 282; *Barnes*, *B. of Bom.* p. 396; *Young*, *Jour. B. N. H. S.* xi, p. 572; *Sewell*, *ibid.* p. 547; *Aitken*, *ibid.* p. 552; *Oates*, *Game-B.* ii, p. 102; *Blanford*, *Fauna B. I.* iv, p. 423.

Sarcidiornis melanonota, *Oates*, *B. of Brit. Burm.* ii, p. 275; *Salvador* *Cat. B. M.* xxvii, p. 54.

Description. **Adult male.**—Head and neck white, spotted with metallic-black feathers, coalescing more or less upon the crown, nape, and hind-neck; lower neck and whole lower plumage white, tinged sometimes with rufous-grey; rest of upper plumage and wings black, glossed with green and blue, except on the secondaries, which are glossed with bronze, and the scapularies, on which the gloss is purple; tail brown; sides of the body tinged with grey; a black mark (almost a demi-collar) on the sides of the neck, and another black band in front of the under tail-coverts descending from the rump. Lower back grey.

Female.—Like the male, but smaller and duller; head and neck more spotted with black, but the black less glossy in character, and the gloss on the upper parts also is much less developed. Lower back, rump, and upper tail-coverts all grey.

Young.—Like the female, but still more spotted about the head with a dull blackish-brown; the black of the back and wings also is replaced by brown and is without gloss.

Nestling.—"Upper parts greyish-brown; underparts greyish-white; upper part of the head brown; a whitish frontal band runs on each side of the head over the eyes; a white crescentic band bounds behind the brown colour of the upper part of the head; a narrow brown band starts from the ear-coverts and reaches a brown band on the hind-neck: two white patches on the side of the back, at the base of the wings, and two others on the sides of the rump; posterior edge of the wing whitish." (*Salvadori*.)

"The young are dull earthy brown above and dirty white below." (*Hume*.)

Iris dark brown, that of the young is said to be even darker; bill and comb black, legs and feet plumbeous.

The female and young have no comb.

Dimensions. Male.—Length 28·5 (*Hume*) to 34 inches (*Jerdon*); wing 13·37 (*Hume*) to 16 (*Jerdon*); tail 5·25 to 6; bill from gape 2·5 to 2·75, at front 2·5 (*Jerdon*); comb 2 to 2·5 in the breeding-season only; tarsus 2·62 (*Hume*) to 3 (*Salvadori*).

Female.—Length about 25 to 27 inches, wing 11 to 11·5 (*Salvadori*), 12 to 14 (*Jerdon*).

The Nukhta is found throughout the Indian continent, though absent here and there where the country is unsuitable, but is certainly more abundant towards the west than in the east.

Hume says: "I do not know of its occurrence in the Punjaub, Trans-Sutlej, or in Scind, except as a mere straggler to the easternmost portions. I have no record of its appearance in Sylhet, Cachar, Tipperah, Chittagong, or Arakan." Again, in another place, he adds, when enumerating the places where it is to be found (excluding perhaps the Sunderbuns, Jessore, and one or two other of the deltaic districts): "Of these places, several have now to be erased from the list of localities not inhabited by this bird." In the Punjaub, as far as I can ascertain, it is undoubtedly a rare visitor; still it is found there, and is not so rare as Hume deemed it to be. Of its occurrence in the Trans-Sutlej, the following notes occur in 'Stray Feathers' (vol. x, no. 5, p. 430):—

"Although it (the Comb-Duck) certainly is nowhere common in this region, I know of its having been shot on more than one occasion in the Lahore district, and, again, further south in the Baree Doab, but only in the rainy season, and always in the immediate vicinity of the canals.

"I heard of a nest being taken as far south as the Changa Manga Plantation, but I am not sure of the fact. I have never heard or seen the bird west of Baree, but throughout the canal-irrigated portion of the Baree Doab, the whole tract between the Beas and the Sutlej, and the Baree, it certainly does occur, though very sparingly, during the rainy season."

After this note, which is by G. Trevor, Hume goes on to quote the

'Asian' on the subject to the following effect:—"I am happy to state that it not only occurs, but that it breeds in the Punjaub, Trans-Sutlej. A friend of mine, an engineer on the Barea Doab Canal, sent me a female *Sarcidiornis* for identification from Bhambé, in the Lahore district. On opening the bird I found a perfectly-formed egg ready to be laid, and from other investigation it seemed clear that there was a nest in the vicinity. During the rains the neighbourhood of Bhambé in one direction is fairly under water, and canna brakes are very common, with patches of water between, and dotted here and there with large trees, just the place for the Nukhta. It was at one such place that my friend saw the pair often, and on the day he shot the female, had fired one or two shots unsuccessfully at her or the male; but was rather surprised at the way in which both returned, wheeling round and round without going away any distance. As soon as the female was shot, the male went further off, and did not afford another shot; but the whole circumstances go far to prove that there must have been a nest at hand."

In Cachar it is by no means very rare. I have seen it in Sylhet, and again have had notice of its occurrence sent me from the North Looshai Hills. As regards the Sunderbunds, Jessore was the district in which I first made the acquaintance of this species—a distant acquaintance only, it is true; but in the next district (Khoolna) we came into closer contact with one another. Here a pair of Nukhtas formed part of a bag of 140 couple of Duck and Teal got by my father, Mr. T. Wilcox, and myself, in the Moolna bhal, a vast extent of swamp and water, covering fully twenty square miles of the country. This was in the cold weather, the end of January 1883. In Cachar, Sylhet, and Looshai, the birds remain all the year round and breed as they do in most other parts of their habitat; but in the Sunderbunds I should think they are very probably migrants, though I have no evidence on this point.

In Burmah, Oates reports them as common in Pegu, and it is almost certain that they have been, or will be, recorded throughout that province, extending through the Indo-Burmese countries.

Out of India their habitat may be described roughly as Africa south of the Sahara, and they are also found in Madagascar, though they do not seem particularly common there. Hume says that they do not ascend the hills, but in North Cachar and in Looshai they are, at all events, found up to about 2000 feet, if not considerably higher. Mr. C. G. Scott, an engineer on the Assam-Bengal Railway, told me that once late in April one of these birds flew quite close to him as he was walking down one of

the cuttings at an elevation close on 2000 feet, and the bird, a drake, was then flying steadily up the valley. I have seen Nukhtas myself, a pair of them, in the Mahor Valley at heights ranging between 1500 and 2000 feet, and I once heard its hoarse cry in the Jiri Valley at least as high as the latter elevation. I know for a certainty that they breed up to at least 2000 feet, and I am almost sure that a pair had their nest in the Mahor Valley even higher up than this. I was out after Sambhur at the time they were first seen, and in the centre of some heavy tree-forest I came across a collection of small grassy swamps, varying from some one to two hundred yards in diameter. All round these were very lofty trees, and wherever there was sufficient dry land, others were dotted about between the pools.

On my approaching the open, two Nukhtas flew from one of the trees, uttering their loud calls repeatedly. Instead, however, of flying straight away, they continued to fly round in great excitement, and refused to leave the place, even after I had fired at and missed a deer.

The sort of ground they prefer has been variously described by different writers. Here they keep much to water in forests, and more especially to such as is well covered with weeds and grasses, and not of the clearest and cleanest. One or two birds are always to be met with near Diyangmukh, on a nullah which runs through heavy forests and in the cold weather is reduced to shallow pools.

Hume says :—" It much prefers well-wooded tracts, not dense forests like the White-winged Wood-Duck, but well-wooded level, well-cultivated country. It is a lake bird too, one that chiefly affects rush and reed-margined broads, not bare-edged pieces of water like the Sambhur Lake, and it is comparatively rarely met with on our large rivers. I have shot them alike on the Ganges and the Jumna in the cold season, but it is far more common to find them in jhils and bhils. *I have never found it in hilly ground, and very rarely in small ponds.*" [The italics are mine.] "Just when the rain sets in they seem to be on the wing at all hours of the day, and almost wherever you go in the North-West Provinces you see them moving about, always in pairs, the male as a rule in front. They never, as far as I have observed, associate in flocks. There may be half a dozen pairs about a broad in the rains, or half a dozen families, each consisting of two old and four to ten young birds, during the early part of the cold season ; but I have never seen them congregate in flocks as most geese and so many of the ducks do."

Oates (*vide* 'Birds of British Burmah') seems to have found them in

much the same kind of places, and also in paddy-fields ; but he says that in Burmah it is found "singly, in pairs, or in small flocks of twenty or thirty individuals." Jerdon, on the other hand, says that, although it is generally found only in small parties of four to ten individuals, yet it is sometimes found in flocks numbering over a hundred. This I should imagine is most unusual, and we may take it for granted that, *as a rule*, they go in pairs only, except when they have a family, and that occasionally two or more families join forces ; and again, when the breeding-season is over, the young are often to be found singly, the old birds alone continuing to keep in pairs. Mr. Young found them in flocks in both the N.W.P. and in the Panch Mahals, but adds "they seem to keep their pairs even in the flock, for when one has been shot, and the flock has flown away, I have observed one remain behind and flying round, searching for its mate."

The general consensus of opinion appears to be that they are not very wary birds, and in consequence are not hard to bring to bag. Of course, as Hume says, you cannot walk up to them and pot them as they swim about unconcernedly on the water ; but with comparatively little trouble and care one ought always to succeed in getting near enough for a shot, unless the country surrounding them is utterly bare and destitute of cover for the sportsmen. Once disturbed, their flight, &c., is variously described. Hume says : "Their flight is powerful and fairly rapid, and that they are all round quicker, more active birds than geese, both on the wing and in the water." Jerdon, however, did not think much of the bird as a "progressionist," and Legge describes their flight as heavy, and leads one generally to the belief that he deemed it rather an awkward, clumsy bird—which it certainly is not. Tickell's remarks in general on this bird vary so much from those recorded from other people that they must be quoted nearly in full :—"I have met with these birds chiefly about West Burdwan, Bankoora, Singhoom, and Chota Nagpur, in open, uncultivated, bushy country, or on a gravelly soil scattered over with small, clear ponds or tanks, where they may be found in parties of four or five, resting during the heat of the day on the clean pebbly or sandy margins, and flying off, if disturbed, to the next piece of water. Wherever found, they appear to prefer clear water, with a gravelly or stony bottom, and are never found in shallow, muddy jhils or marshes, which attract such hosts of other kinds of wild fowl. They are wary, and as they take to wing, generally at a long-shot distance, and have both skin and plumage exceedingly thick, it is difficult to kill them with an ordinary fowling-piece ; and if winged

on the water, they dive so incessantly as to require the help of several people to catch them.

“I have placed their eggs under domestic hens and ducks, and hatched and reared the young birds easily, but they never become thoroughly tame, and escaped on the first opportunity, though they had, up to the time of their flight, fed readily with the poultry in the yard. They ran and walked freely, and could perch on anything that did not require to be grasped. It is an exceedingly silent bird—indeed, I have never heard it utter any sound. They repose chiefly on gravel beaches by the side of clear water. Their flight is high, and well sustained. At night they roam over the paddy stubble, and I have found their stomachs full of rice during the harvest.”

Other people seem to have been more successful than Tickell in domesticating this fine duck (or goose), and there are numerous instances on record in which the bird has been readily and thoroughly tamed. How a cross between this and any of the breeds of Domestic Duck would answer is very problematical. Of course, the product would be a bird of size and weight, but how about the flavour? The Nukhta is not a bird that finds much favour with most people as an article of food, though it makes very good soup and not bad curry; and the ducklings, when killed just after they have taken to the wing, are quite delicate and good.

Though Hume never found any grain except wild rice in the stomachs of the birds he examined, others, besides Tickell, have found that cultivated rice forms one of the articles of their diet. They eat all sorts of shoots, roots, seeds, &c., of water plants, varying this vegetarian food with a little animal stuff now and then, such as worms, spawn, larvæ, and perhaps an occasional fish.

The voice of the Nukhta is, according to Legge, “a low, guttural, quack-like sound, between the voice of a Duck and a Goose.” The few I have heard uttered loud cries, which seemed to me far more like the notes of a goose than a duck. A pair, whose nest I afterwards found, used to herald my approach to their particular piece of water with loud trumpet-calls, uttered by them, when they first saw me, from their perches high up in the tree. They roost, I believe, always in trees, and not in the water or on the ground, and they are not nocturnal, or even crepuscular, birds in their habits, as are most of their order.

The Comb-Duck is one of those which almost invariably resort to trees for nesting-purposes, as a rule making a rough nest of grass and a few sticks in some large natural hollow of a big tree, generally at no great

height from the ground. Sometimes, however, they build their nests in the forks of the larger limbs, especially when three or four such branch out together from the trunk itself. Occasionally they seem, like the Whistling-Teal and the Mallard, to make use of other birds' nests, for Mr. A. Anderson found some eggs in the nest of a *Haliaetus leucoryphus* which he believes to have been laid by a Nukhta. Captain G. T. L. Marshall also found an egg of *Sarcidiornis* in the nest of *Dissura episcopa*.

The only nest I have taken myself in North Cachar was placed in a large tree standing by the edge of a small swamp, the latter completely covered with dense ekra and grass, except for a few feet all round the edge, and, even there, short weeds and water plants almost hid the water from sight. The nest, which was rather a large one of sticks, roughly lined with grass, was placed in a hollow between where the first large boughs sprang from the bole of the tree. It was not ten feet from the ground, but the boughs were so massive, and so well inclosed the nest that I visited the pool, stood under the trees, and saw the parent bird several times before I noticed where it was. It contained three large eggs, just like those described by Hume, with a beautiful texture, reminding one, when touched with the finger, of the eggs of the Barbets and Frogmouths, possessing the same satiny feeling which is so uncommon outside the families mentioned. In colour they are nearly white, and have a fine gloss when freshly laid, but they soil very quickly, and are then difficult to clean again.

A most interesting exception to the general nesting-habits of this bird is given by E. H. Aitken in the 'Bombay Journal' (*in loc. cit.*). He writes:—"On the 30th August eighteen years ago, I was wandering about with my gun on the banks of a small brackish stream, near Kharaghora, when a female Comb-Duck got up and went off. I fired and missed her. She flew on for some distance, and then turned and came straight for me and I killed her. She was handed over to the cook in the course of the day, who came to say that he had found an egg in her. It was ready to be laid, and there was no appearance of any more in her, so I came to the conclusion that the bird had made its nest, and laid all the eggs but one, when it had the misfortune to fall in my way. Next day, I took two men with me, and began to make a systematic search for its nest. There were scarcely any trees in the neighbourhood, but many patches of rank rushes, and among them I hunted long without success. At last one of my men, who was on the other side of the stream, signalled to me and pointed to a hole in the bank, which at that part was quite perpendicular. I crossed,

and, looking into the hole, found sixteen eggs which exactly matched the one taken from the body of the bird. They were lying on a bed of twigs and quill-feathers of some large bird, with a little lining of down and some fragments of snake skin. The hole was about five feet from the ground, and about two feet deep, the entrance being about nine inches wide by about six deep. The hole went into the bank quite horizontally, and there was nothing in the way of a ledge to alight on at the entrance, so that the bird must have popped in as a pigeon does. Such a feat fully justifies the opinion, that the Comb-Duck is not a clumsy bird."

The number of eggs laid seems to vary very much, but probably a dozen or less is about the normal number, though Mr. Anderson seems to have had from fifteen to twenty brought to him not infrequently, and on one occasion found the enormous number of forty eggs, of which thirty-nine were normal and one under-sized. He captured a female on this nest, and says that she was in an emaciated condition, and therefore, he believed, authoress of the whole forty eggs.

Probably a wild bird, with no extraneous aid in the way of artificial food, &c., would be a great deal exhausted after such an effort, but a domestic hen would not think it anything out of the way, nor would she be any the worse for it.

Hume's forty-five eggs varied from 2.22 to 2.58 inches in length, and in breadth between 1.65 and 1.78, averaging 2.41×1.72 . The little clutch found by Mr. Anderson, excluding the abnormally small one, averaged $2\frac{1}{2} \times 1\frac{3}{4}$ inches, giving an average for the whole eighty-four of 2.45×1.74 almost.

Jerdon says that the Nukhtas breed in July or August "in grass by the side of tanks, laying six to eight whitish eggs." Jerdon did not, however, know, nor did he care much about, the oological part of ornithology; and I do not think much weight need be attached, as a rule, to what he says about nidification.

The breeding-time, nearly all over India, varies from the end of June to the beginning of September, and probably much depends on when the rains commence. Here, in Assam, where the rains, like the poor, are always with us, I think the birds begin to breed in the end, or even in the beginning of June. In Bengal they commence to breed in early July; in the north-west in the late July or August, sometimes as late as September. In Burmah they seem to breed in the two first-mentioned months, and in Ceylon alone they alter their habits and are said to breed

in February and March. This last, however, is not very well authenticated, and may be a mistake, for Legge says : "In Ceylon this Goose breeds—*I understand* [the italics are mine]—in February and March."

The African form alluded to by Hume as *S. africanus* is not distinct from our Indian *S. melanonota*, though it averages a little smaller—the wing being about 13 or 14 inches in the male.

Hume also refers to Sclater's plate of *Sarcidiornis*, and, referring to the under tail-coverts therein depicted, says that in all the Indian specimens he has seen the tail-coverts are always white. As a matter of fact, although the under tail-coverts in the plate should have been white and not yellow, the bird shown in the plate is not our Nukhta at all, but *S. carunculata*, a much smaller species, found in Brazil, Paraguay, and North Argentina.

This and other ducks belonging to this subfamily are amongst those requiring a close time, as all of them are residents or mere local migrants. This close time might extend from the 1st June to the 1st December. Tickell says that by October most of the young are on the wing, but in some parts of India this is at least a month too early ; and I do not think that the 1st December is too late a date for commencing their slaughter.

Genus ASARCORNIS.

This genus is one specially created by Salvadori for the White-winged Wood-Duck, which previously had been placed, either with *Sarcidiornis*, *Casarca*, *Anas*, or *Tadorna*. It seems to be allied most nearly to the first-mentioned of these genera, differing in possessing no comb or spur, and in having a flatter and larger bill. There is no other member of this genus.

Hume, in a footnote to 'Game-Birds,' p. 147, gives his reason for rejecting the name *A. scutulata*, which is, that Blyth considered Müller's birds to be of a different species to the wild ones found in India and Burmah. Salvadori, however, who has had more material to work on than was available to Hume at the time he wrote, seems to consider that *A. scutulata* does apply to our bird, and that the domesticated or confined bird is inclined to albinism. Under the circumstances, I think it is better to follow Salvadori and accept Müller's name.

(6) ASARCORNIS SCUTULATA.

THE WHITE-WINGED WOOD-DUCK.

Anas scutulata, Hume, *Str. Feath.* viii, p. 158.

Casarca leucoptera, Jerdon, *B. I.* iii, p. 793; Hume & Davis, *Str. Feath.* vi, p. 489; Hume, *ibid.* p. 170.

Casarca scutulata, Hume, *Str. Feath.* viii, p. 115; Hume, *Cat.* no. 955.

Anas leucoptera, Hume & Mar. *Game-B.* iii, pp. 147 & 172; Oates, *B. of Brit. Burm.* ii, p. 281; Hume, *Nests & Eggs* (Oates ed.), iii, p. 287.

Asarcornis scutulata, Salvadori, *Cat. B. M.* xxvii, p. 60; Young, *Jour. B. N. H. S.* xi, p. 572.

Asarcornis leucoptera, Oates, *Game-B.* ii, p. 139.

Asarcornis scutulatus, Blanford, *Fauna B. I.* iv, p. 424.

Description. **Adult male.**—Head and upper part of neck white thickly spotted with black, the black spots usually more numerous on the upper part of the head and neck; lower part of the neck and mantle glossy black, the whole of the lower parts rich chestnut-brown, more or less mottled, when freshly moulted, with glossy black on the breast and abdomen; back, rump, and upper



THE WHITE-WINGED WOOD DUCK.
Asarcornis scutulata.

tail-coverts olive-brown, glossed with metallic-blue and green; scapularies olive-brown; smaller upper wing-coverts white, the median ones a soft blue-grey, broadly tipped with black, which is highly glossed in old males; quills olive-brown, the secondaries with the outer webs bluish-grey forming a speculum; the first inner secondary or tertiary white on the outer web, and the quill next it with a large white patch on the same web; under wing-coverts and axillaries white, the former with a few brown feathers mixed; tail blackish, glossed with green in old males.

The bill varies from lemon-yellow to deep orange, the base and tip black, and with black mottlings everywhere, generally least numerous about the centre of the bill. Gonyes paler, as a rule, than the rest of the bill. During the breeding-season the base of the maxilla becomes considerably swollen, though never becoming an actual comb, and the orange colour deepens to deep orange-red or light red. The legs and feet vary like the bill from lemon-yellow to a dull orange; the joints, toes, and webs are almost invariably mottled with dull greenish, and patches of the same colour are to be found on the tarsus itself. The toes are always dark. Irides brown and blood-red in old birds.

Weight $7\frac{1}{2}$ to $9\frac{1}{2}$ lbs. when in good condition. An old male in captivity, and very fat, weighed $9\frac{3}{4}$ lbs.; but wild birds seldom weigh more than $8\frac{1}{2}$ lbs.

In old males all the spots on the black on the upper parts are glossed with green, and the bird in life looks a brilliant metallic-green when in the sun. The gloss is green at the tip of each feather with a subtip of purple. The colour of the lower parts varies very much, both in depth of colouring and in the extent of the black mottling. In birds when freshly moulted the colour is usually a rich red-ochre-brown, and the black mottlings—confined more or less to the tips of the feathers—rather extensive. In faded plumage, the lower parts are a pale dull earth-brown, with but little tinge of red, and practically no black at all.

In the same way, by about July or August, the whole of the upper plumage becomes bleached and the gloss almost or quite disappears.

I think very old males become more white about the head and neck, more especially round the eye. A very fine male which was in my possession for some years became quite white for a space all round the eye and down the front of the neck.

Length 26 to 30 inches, wing 14.3 to 15.8, tail 5 to 7 (according to condition), culmen 2.3 to 2.6, tarsus 2.2 to 2.4.

The female does *not* differ conspicuously from the male, and birds in their first plumage are hardly distinguishable; on the whole, they are not so highly coloured or quite so highly glossed, and perhaps have less black on the lower parts. The difference is, however, one only of comparison, and a duck in good plumage is far more highly glossed and coloured than a male whose colours have begun to fade.

The colours of the soft parts are similar to those of the male, but paler and duller: the bill is usually of a pale dull lemon, very rarely with an orange tinge, and never with this tinge at all strongly developed; the black mottlings resemble those on the bill of the drake, and vary to the same extent. In both sexes I have seen bills the ground-colour of which was almost obliterated by the spots,

and others again in which there were only a few small spots near the tip and base.

The base of the upper mandible is never swollen or red in colour. Irides are brown, never, *I think*, red-brown, and certainly never blood-red.

Weight $4\frac{3}{4}$ to $6\frac{3}{4}$ lbs.

Wing 12 to 14 inches, tail 5 to 7, culmen 2.2 to 2.4, tarsus 2.1 to 2.4.

It does not seem necessary here to quote other authors in reference to colorations, size, weight, &c., as a very large number of these birds have passed through my hands or have been kept by me in captivity, and my own notes include all the information given by others.

This is one of the most rare and little-known of our *Chenomorphæ*, and the records regarding its distribution are very limited. Blyth's remarks as to their occurrence in Burmah probably do not refer to this duck at all, and are due to some mistake. From what he says, one would imagine the White-winged Duck to be a very common bird in certain parts of that country; yet Hume says, in vol. vi. of 'Stray Feathers,' Davison has examined the Valley of the Sittang, the Salween, the Attaran, the Gyn, the Haung-Thaw, the Tavoy, and the Tenasserim, but yet he has never seen or heard of this species.

If it does occur in Tenasserim, it can only be as an extremely rare straggler.

As regards Jerdon's letter to Hume, in which he mentions this bird as congregating in large flocks, it is a pity we have not the date of it. In 1864, when he finished his third volume of 'Birds of India,' he evidently looked on the bird as rare in the extreme. He talks of its *occurring* in Dacca and other parts of Eastern Bengal, but does not lead one to infer that it was anything but uncommon even there. If his letter was written prior to 1864, it may be taken for granted that in the meanwhile Jerdon had discovered his mistake, whilst if written after 1864 it shows that Jerdon made a mistake, which, as far as anyone knows, has never been rectified.

He says:—"I have seen several flocks of *Casara leucoptera* in the lower parts of the Brahmapootra, where it joins the Ganges, not far from Dacca, where, indeed, Simson has seen it." Twenty years more added to the years when Hume and his collectors worked the country above referred to has shown that it could not possibly have been the Wood-Duck which Jerdon saw or referred to. That Simson saw it in Dacca certainly does not prove that it inhabits the Megna, Brahmapootra, and Ganges in numbers, and to my own knowledge there has been no record of a single specimen having been seen there for over twenty years. The only other

notice of its occurrence that I know of in Eastern Bengal is of four birds, said to have been seen in Singbhoom by Mr. W. Moylan, when out shooting with two other guns; of which four birds, one (a drake) was shot.

Colonel Graham seems to have found it common in the Lakhimpur district of Assam, where, however, it appears that he only got one bird from Sadiya, and he notes it as rare in Darrang. Godwin-Austen procured one on the River Dunsiri, saw one in the Garo Hills, and knew of one killed in Tezpur. Two were seen by myself in 1886, when partridge-shooting in the Barpeta part of the Kamroop district, and were missed by me with both barrels at long ranges. The bird is known and well described by the Cacharies, but though I once heard a pair on the borders of the Cachar and Naogang districts, I failed to get a sight of them. Specimens have been obtained in Tavoy and Mergui districts, and these end the localities hitherto recorded within our limits. Outside these limits it extends—if the bird is really the same as ours—to the Malay Peninsula, Sumatra(?), and Java. It thus seems probable that it will be found to inhabit suitable localities in Eastern Bengal, where, however, it is of extreme rarity, that it becomes less rare as we enter the Assam Valley, and is found in some numbers throughout the Namba Forest, south of Brahmapootra, and the foot-hills and forest to the north of the same. In Eastern Assam it becomes comparatively common, and extends through Cachar and the Indo-Burmese countries and Burmah to the Malay Peninsula. Mr. E. H. Young (*in loc. cit.*) says that he once shot a duck, which he believes to have been of this species, in a tank in the Central Provinces a few miles from forest-covered hills. The record is not, of course, a certain one, and the locality is so extremely an unlikely one that the identification was probably incorrect.

In 1900 I was stationed at Dibrugarh, the headquarters of the Lakhimpur district, and soon became well acquainted with this duck. Indeed I had only been a few days in the station when a pair flew over the tennis-courts while we were playing tennis, and during the five years I was in the district I must have kept some thirty or forty of them in a tealery and seen others kept by planters and other people in the district.

A Mr. W. D. Burness, for many years a planter in Lakhimpur district, has been singularly successful in obtaining specimens of this fine duck, although, before being told, he did not appreciate the value of the beautiful birds, and shot and ate them.

All along the foot-hills of the Himalayas there stretches a vast strip

of virgin forest, devoid of all cultivation of any sort whatever, but a good deal broken up by swamps and lakes, some so tiny that the trees almost meet over their black stillness, others so wide and big that there may be miles between their opposite banks. In such places as these, especially where pieces of water of the smaller description are numerous, the Wood-Duck may be sought almost with a certainty of success, and on lucky days Mr. Burness would return with three, four, or even five birds, and have seen possibly twice as many again, although the getting of them might have entailed a walk of twenty miles or more. The birds were but seldom seen by him in flocks, generally in pairs, often singly, and never more than five or six birds together. Even in the deepest, darkest woods they were most wary and difficult to approach, and took to flight at the sound of anyone coming within shot. When wounded, they *never* dived, but at once swam to the nearest shore, and scrambling into the woods concealed themselves in the dense undergrowth.

The ducks, however, are not entirely confined to such country, and are frequently met with in smaller patches of jungle in which there are pools and swamps, and I have received numerous specimens shot in such places. They also frequent sluggish streams and backwaters, but never, as far as my experience and information goes, clear waters or swiftly running streams.

Very little information has been forthcoming about their call and very few sportsmen seem to have heard them. Colonel Graham has recorded: "They roost on trees, and frequent solitary pools in deep tree jungle. They are always in pairs and may be heard calling to one another at great distances." This agrees well with what I have known of them. My first experience of them was in North Cachar, when out shooting one rainy day in June I heard two birds calling to one another in loud goose-like calls. The forest was very dense and consisted almost entirely of trees, but through it there wandered a sluggish dirty stream which here and there disappeared into small morasses dotted with tiny pools of clear water. Thinking the safest way to get a shot would be to drive them, I sent my Cachari tracker to beat down the stream towards me from the point some two hundred yards or so above where we heard them calling. The drive proved a total failure, as, though the birds flew within thirty or forty yards of me, they kept inside the forest on the same side of the stream as that on which I was seated, and I hardly caught a glimpse of them, much less obtained a shot. The Cachari told me that when he came on the first one it was in a tree, from which it did not fly until he was underneath, and that

then it made off to its mate, which was some two hundred yards higher up the stream. They then both settled in a small pool and did not again take wing until he had sneaked to within twenty yards, when they got up and flew straight away, passing, as I have already said, just out of sight of me. We heard them calling in the same place for two or three days after this, but when attempts were made to stalk them they made off long before a sight was obtained of them or a shot possible.

The pair met with at Barpeta were seen when I was out shooting Kya Partridge in some ekra-covered patches of swamp surrounded by forest. On this occasion a pair got up out of some swamp, some forty or fifty yards from me, just as I emerged from the forest. Two barrels of No. 7 pattered on their backs at once, but seemed not to have the smallest effect on them. These two birds flew like geese, one bird (the male, I suppose, for he looked much the heavier) about two yards in front of the other, their necks fully outstretched and squawking loudly as they flew for the first few hundred yards. Whilst in the open they flew within a few feet of the ground, but on regaining the forest mounted higher until they altogether disappeared in the distance.

Whilst beating for tiger in scrub and tree jungle on the banks of the Dibru stream, at that time only a succession of muddy pools, we once put up a flock of seven of these grand birds, who flew round and round us, at a considerable distance, for a long time before they eventually cleared off. These seven—the largest number met with in a flock that I have any certain record of—flew in line like geese do, and in the distance would probably have been mistaken for such.

Mr. Moylan, in narrating to me how he met with this duck in Sini, in Singbhoom, said that at the time they were shooting in grass-covered swamps at the edge of heavy forest. They were standing thus, when they saw four birds, which he took to be geese, coming down towards him and his companions. They were at a great height, but a charge of S.K.G. took effect on the foremost and he came crash to the ground, turning out to be a fine drake. It is possible that Mr. Moylan may have been wrong in his identification, but I failed to discover any reason to make me think so, though I questioned him closely on the matter. This was the only occasion on which he ever saw the duck.

In addition to the ringing trumpet-call of this bird, both drake and duck indulge in a very low quacking note, sounding very much as if a Mallard was trying to quack under its breath. Whilst uttering this note

the head is always held low and the bill wide open. When angry they also make a hissing noise at one another.

They are charming birds in captivity, and are tamed without the slightest difficulty. When the breeding-season approaches, they, if not confined or pinioned, fly away ; but throughout the cold-weather months they may be allowed to wander about at their own discretion, and will always keep near home if regularly fed. When thus domesticated it is a curious fact that they seem never to use their wings as a means of locomotion, but will walk very long distances to and from water. A duck belonging to a planter whose house was nearly half a mile from water invariably *walked* there and back every evening, returning to the house for the hot hours of the day and for the night. This particular duck was the object of a wild infatuation on the part of a small domestic drake, who followed her about wherever she went, and as the Wood-Duck could walk at, at least, thrice the rate the drake could, he eventually succumbed to sheer exhaustion and want of time to feed in. She, however, totally ignored all his advances, and in April flew away to find a wild mate.

They are very impatient of heat and the birds in my aviary always retired indoors as soon as the sun was up, and even in the cold weather they always kept under cover from 10 A.M. to 2 P.M. Those I sent down to the Calcutta Zoo died very quickly, except one fine drake, who lived about eighteen months before dying of the same disease that carried off all the rest—an affection of the stomach.

My birds were practically omnivorous, but would touch no dead animal food. Every other day a pail full of small fishes was emptied into their tank, and by nightfall these were generally all accounted for ; but any that died during this period were never eaten. In the same way, worms that ceased to struggle were discarded, and grasshoppers, frogs, and snails would only be taken if alive.

They ate paddy and husked rice freely, and I have kept birds for some weeks on this alone, and they kept fat and well upon it, but, at the same time, when they were offered animal food they preferred it to grain. Green food of all sort they refused unless very hungry, and I could never induce them to eat any sort of water-weed, though one would expect them to eat such in a wild state.

They were extremely expert in catching fish ; as a rule, they skimmed along the top of the water with the head and neck immersed, but when necessary would dive and chase the fish under water. Of course, their speed when doing so was not comparable to that of Cormorants, or the

diving Ducks, under the same circumstances, but it was sufficient to ensure the capture of almost any fish. They are very mild, well-behaved birds, and not, as a class, at all quarrelsome. Some tiny Whistling-Teal shared their captivity, and were always treated with consideration and allowed their share of food, &c. As already said, they very soon become tame, and within a few weeks they all were tame enough to accept food from the hands of those they knew well; but generally when strangers appeared they retired to their inner room. When not feeding, they almost invariably sat on the perches and not on the ground, and they showed considerable activity in turning about on them, at the same time they kept their position almost entirely by balance and not grasp, as anything touching them at once upset them.

Their trumpet-call was very seldom heard when caged, but about April and May they were sometimes heard calling at early dawn and even more rarely at sunset.

I quite failed to induce them to breed, though one duck which died—the only one I lost thus—contained eggs larger than a hen's eggs. This was in the month of June. The birds paired regularly every May, and the bases of the drakes' bills became swollen and red, but the ducks never laid any eggs during the five years they were kept.

The only egg I have of this species is one which was taken in the Cachar Hills by one of my trackers at the place where the attempt was made to have the birds driven up for a shot. The nest was taken from a deep hollow, caused by decay in the first bifurcation in the trunk of a large tree standing on the banks of the stream already described. The tree was a very small thick one, and the hollow in which the egg was found was said to be some twenty feet from the ground. The nest was described as a mass of grass and other rubbish with a lining of feathers and down, probably of the bird itself; though, as none was shown me, I cannot be certain of this.

In Sadiya, whence I obtained a great number of birds and skins, the Mikirs assured me that the birds sometimes made their nests in holes in trees, sometimes made a rough nest on masses of branches, and at other times made a grass and feather lined nest in scrub-jungle or grass at the edge of pieces of water lying in jungle.

The live birds were all obtained by setting innumerable nooses about the edges of the waters frequented by them, and I was told that they were easy to set, as these ducks habitually resort to the same few feet of ground when entering or leaving the water.

The duck commences its moult in September or early October, and this once commenced is extremely rapid ; the quills—both rectrices and flight-quills—come away all together, and the bird is incapable of rising more than a foot or so from the ground for about a fortnight, by which time the wing-quills are sufficiently advanced to enable them to flutter from one perch to another, or, in exceptional cases, to take short flights. The soft feathers come after the quills, though a few new breast- and back-feathers may sometimes show even before the quills fall.

The contrast between the glossy new feathers and the dull blackish old ones is very great, and one can hardly believe that it is the same bird. The natives say that, prior to the moulting, these ducks all retire to morasses lying in absolutely impenetrable forest and cane-brake, and there remain until they are once more able to fly.



THE PINK-HEADED DUCK.
Rhodonessa caryophyllacea.



Genus RHODONESSA.

The genus *Rhodonessa*, like the preceding, consists of but one species, which species is confined to Indian limits. In adult or semi-adult birds the colour of the head is sufficient to define it at a glance; should, however, the bird be in its first plumage, reference must be made to its loreal feathering, as mentioned in the key above.

(7) RHODONESSA CARYOPHYLLACEA.

THE PINK-HEADED DUCK.

Anas caryophyllacea, Jerdon, *B. I.* iii, p. 800; *Hume, Nests & Eggs*, p. 644; *Fairbank, Str. Feath.* iv, p. 264; *Davidson, ibid.* vii, p. 95; *Ball, ibid.* p. 232; *Hume, ibid.* p. 492; *id. ibid.* viii, p. 801; *Hume & Mar. Game-B.* iii, pp. 174, 435; *Barnes, B. of Bom.* p. 404.

Rhodonessa caryophyllacea, *Ball, Str. Feath.* ii, p. 438; *Hume, ibid.* viii, p. 115; *id. Cat.* no. 960; *Butler, Str. Feath.* ix, p. 437; *Reid, ibid.* x, p. 81; *Hume & Mar. Game-B.* iii, pp. 173, 435; *Oates, B. of Brit. Burm.* ii, p. 284; *A. Taylor, Str. Feath.* x, p. 531; *Hume, ibid.* xi, p. 344; *Hume, Nests & Eggs (Oates ed.)*, iii, p. 200; *Salvadori, Cat. B. M.* xxvii, p. 61; *Inglis, Jour. B. N. H. S.* xv, p. 338; *id. ibid.* xvi, p. 75.

Description. **Adult male.**—"Head, sides of neck, and hind-neck a beautiful pale rosy pink, with, in the breeding-season, a small tuft of still brighter rosy on the top of the head; throat dark brown; rest of the plumage fine glossy dark chocolate-brown, paler and less glossed beneath, but under tail-coverts very dark; mantle, scapulars, breast, and sides with very fine rosy-whitish vermiculations or points; edge of the wing whitish, speculum reddish-fawn or dull salmon-colour, with a white band at the tip of the secondaries; outer web and tip of the outer primaries brown, the inner web and inner primaries buff; tertials glossy chocolate-brown, narrowly edged with black on the outer web; under wing-coverts and quills beneath pale pink colour, with a satin lustre; tail chocolate-brown." (*Salvadori*.)

In Jerdon and Barnes (Appendix Jerdon), *in loco citato*, we find the additions "edge of the wing whitish, uppermost tertiaries rich glossy green."

This is right and is shown in Hume and Marshall's plate, but the average bird has not so bright or light a green and has it even more glossy.

The depth of the brown varies a good deal, and I am inclined to think that,

it is owing to age, very old birds being the darkest, nearly black. Condition of plumage in this, as in every other species of brown or black bird, has a good deal to do with the colour, and brown in old plumage is always *much* duller and paler than in the fresh. I have certain Spine-tail Swifts which show a mixture of quite light brown feathers with new black ones glossed with blue, the former being merely old ones from which the colouring-matter has become exhausted.

"Bill reddish white, rosy at the base and bluish at the tip; irides fine orange-red; legs and feet blackish, with a tinge of red." (*Jerdon*.)

"Bill dirty red; cere flesh-coloured; irides deep orange-red; legs and feet reddish-slate" (*Shillingford*). Of another he notes:—"Bill light pink, assuming a purplish tint towards gonys; cere flesh-coloured; irides deep orange; tarsus, web, and nails dark slate, inclining to purple; lower mandible more deeply coloured than upper."

The following note of my own may explain Shillingford's "cere." Bill dull reddish-pink, deeper on mandible and darker still on gonys, the base of both mandibles, more especially the maxilla near the forehead, purer and brighter pink. *This note was taken from an adult male.* Inglis describes the soft parts from a live bird in his possession: "Bill light pink, pinker at tip on nail; base of maxilla and whole lower mandible flesh-coloured, the colour being on some skins $\frac{1}{2}$ " broad (the cere) at the base of the maxilla; edge of nostrils black; iris light red; legs and feet reddish-black; rim round eyelids flesh-coloured."

"Length about 24 inches, wing 10·5, tail 4·25, culmen 2·1, tarsus 1·6." (*Salvadori*.)

Female.—"Similar to the male, but duller and paler, and more of a smoky brown; the pink of the head is dingier and paler, and there is a broad brown medial band from forehead over crown and occiput, and (diminishing rapidly in width) on the back of the upper neck; but the most conspicuous difference is that the dull pink of the face runs on, unbroken, over the entire chin and throat, so that there is no trace of the dark band along chin and throat so conspicuous in the male." (*Salvadori*.)

The colours of the soft parts in the female seem to differ in being all of a duller hue. There is only one sexed skin in the British Museum (which possesses only six adult skins altogether), and this a female. The only colours given, however, in the catalogue are those quoted from Shillingford. I do not know the authority from which these are taken, and Shillingford himself does not seem to have sexed his specimens.

Oates says that of the birds he has examined he has found the females to be about equal to the males in size. Oates gives the wing as 11 inches. The only other record of female measurements is in the Appendix to 'Game-Birds,' where a female is said to be 23 inches long with a wing of 10·5 and an expanse of 37 inches; strange to say, also, she weighed more than three out of the four males that are mentioned in the same place.

Young.—"Head and neck pale rose-whitish colour, with the top of the head, nape, and hind-neck brown; the whole plumage lighter brown; the underparts pale dull brown, with the edges of the feathers whitish." (*Salvadori*.)

I do not understand the young bird depicted in the plate in 'Game-Birds,' and have never heard of any like it in plumage, the "rose-whitish" colour being always a distinct feature.

The headquarters of this Duck are, as Hume says, Bengal, north of the Ganges and west of the Brahmapootra rivers ; above all, it is most common in Maldah, Purneah, Purulia, and adjoining districts, the two first-named places being especially favoured. It has also been obtained in Arrah, Mozufferpore, Chota-Nagpur, and Ranchi, where it is only a rare bird, and Singhboom, where it is rather more common. It is also found sparingly through Orissa, and as far south as Madras, and all through Eastern Bengal and Assam up to Manipur, where Hume obtained it. He says in vol. xi. of 'Stray Feathers' about *Rhodoneessa* :—"This species is very scarce in Manipur. I only saw it at the Lagtak Lake, and there I only saw one party that kept up in a weedy lagoon at the north-east corner of the lake, where it was impossible to get them. I did get a single bird, but that was only by lying upon several occasions in a thick reed-bed and getting them driven. Three times they went in the wrong direction, but having at last made out their line, I laid up in the right place the fourth time and knocked down a brace, of which, however, I only recovered one ; I had no dog. This species occurs in Sylhet, and has been procured in various parts of the Assam Valley right up to Sadiya, but alike in Assam and Sylhet (there seems to have been no record of its occurrence in Cachar) it appears to be excessively rare, little more than an occasional straggler."

In Burmah it is extremely rare ; Blyth obtained it in Arakan, and says that it occurs in Independent Burmah (where?), but Oates did not come across it in Pegu, and I can find no other record of it.

Hodgson obtained it more than once in Nepal, and Pemberton in Thibet. "A Member of the Society" in vol. ii. of the 'Bombay Journal' writes :—"In Scind . . . I have one report of the Bengali Pink-headed Duck occurring as a straggler, but it cannot yet be called a recorded species." I suppose by this he means that he does not place much faith in the report.

I see Murray does not record it as a Scind bird, although he is very generous in the number of birds he assigns to that part of India.

Mr. Moylan told me that once out shooting in Sini, in Singbhoom, with three other guns, they accounted for no fewer than six of these lovely ducks. They were found in the thick, weedy, reed-covered tanks lying just outside the heavy forest. Here they were in company with vast numbers of other kinds of Ducks and Teal, a big bag of which was made on this occasion. He seems frequently to have met with them in various parts of Singbhoom, but, as far as I could ascertain, had not seen any others shot.

In the Punjab its occurrences are limited to four actually recorded. Two were shot by Colonel Kinloch and another is mentioned by him as having been shot by a friend (a brother officer), whilst the other is noticed by Hume. All four birds were obtained near Delhi. In the North-West it is equally rare, and as the authorities who would attempt to prove otherwise are anonymous, it is not worth while quoting them. In Oudh it is perhaps less rare, and a few birds are seen and either shot or netted nearly every year. Latham says that it "is common in Oudh, where it lives generally in pairs, is often kept tame, and becomes very familiar" (!).

Shillingford's note on the "Pink-headed Duck," which appeared in the 'Asian,' gives so much information—and so little is to be obtained elsewhere—that I reproduce it *in extenso* :—

"During the cold weather, November to March, the Pink-headers remain in flocks varying from 8 to 30, or even 40 birds, in the lagoons adjoining the large rivers, and have been observed by myself in considerable numbers in the southern and western portions of the district, that portion of Eastern Bhagalpur which lies immediately to the north of the River Ganges and south-western parts of Maldah. They come up to the central or higher parts of the Purneah district in pairs during the month of April, begin to build in May, and their eggs may be found in June and July. The nests are well formed (made of dry grass interspersed with a few feathers), perfectly circular in shape, about 9 inches in diameter, and 4 or 5 inches deep, with 3 or 4 inch walls, and have no special lining. The nests are placed in the centre of tufts of tall grass, well hidden and difficult to find, generally not more than 500 yards from water. They lay from 5 to 10 eggs in a nest. Both the male and female have been started simultaneously from the vicinity of the nest, but whether the former assists in incubation is uncertain, though, judging from the loss of weight during the breeding-season, the male must be in constant attendance at the nest. The weight of five males shot between the 13th February and 28th June, 1880, in consecutive order, being :—(1) 2 lbs. 3 ozs. (13th February) ; (2) 1 lb. 14 ozs. ; (3) 2 lbs. ; (4) 1 lb. 13 ozs. ; and (5) 1 lb. 12 ozs. (28th June).

"When the young are fledged in September–October the Pink-headers retire to their usual haunts in the jungly lagoons.

"The following account, as indicating their strong attachment to their young, may prove of interest. On the 17th of July, 1880, whilst searching for Pink-headers' nests with F. H. at the northern extremity of Patraha Patal, where nests were reported, we flushed a female Pink-header in the

grass-jungle on the banks of the Patraha jhil. F. H. fired with his miniature express at a distance of about 300 yards at the bird, which had settled at the other end of the jhil. The ball was seen to strike the water some distance above and a little to the left of the bird, which did not rise. Upon going up to the spot, to our surprise she fluttered about and dragged herself along with loud quackings. Being closely pursued she flew along at an elevation of about 6 feet from the ground in a manner that led us to believe that she was badly wounded, and one of her wings damaged, and she fell rather than settled in a patch of grass on dry land. Upon approaching this a similar manœuvre was gone through, and she deposited herself some 100 yards further on. Having decoyed us thus far she flew up into the air with such a facility that our old Mahout could not help exclaiming, *pjair jeegya* (it's come to life again), and directed her flight in a direction away from the piece of water. After describing a considerable circuit, she came back to the jhil on the banks of which we were standing. Two more bullets were fired at her from the same gun, which only made her rise after each shot and settle down again some ten yards further on. Seeing that her tactics had failed in drawing us away from the vicinity of her young, she again took to the grass-jungle, and all endeavours to flush her again proved futile, though she was observed in the same piece of water subsequently."

What a pity Shillingford has not given us some details concerning all the nests he seems to have found and also of the numerous eggs he obtained: whether they were like those he sent to Hume, or whether they were like most other ducks' eggs. He did send five eggs to Hume, one of which was, I believe, taken by himself and the others by Mr. T. Hill, of Jeruneah Factory, in Purneah.

Of these five eggs Hume remarks:—"The eggs are quite unlike those of any other duck with which I am acquainted. In shape they are very nearly spherical—indeed, one is almost a perfect sphere.

"The shell is very close and compact, but not particularly smooth or satiny to the touch, and is entirely devoid of gloss.

"In colour it is nearly pure white, with here and there traces of an exceedingly faint yellowish mottling, probably the result of dirt. Even held up against the light, the shell is white, with scarcely a perceptible ivory tinge.

"The five eggs sent me by Mr. Shillingford measure as follows: 1.82×1.7 inches, 1.78×1.68 , 1.8×1.62 , 1.71×1.69 , 1.81×1.61 .

"There is no possible doubt now that these eggs, taken at two different

times by two different persons, are really the eggs of the Pink-headed Duck, but at the same time it must be admitted that they are eggs which no one versed in oology could, without positive proof, have accepted as pertaining to this species."

All observers who have recorded their observations otherwise than anonymously concur in stating this duck to be one of enclosed waters, and it seems to prefer such as are well covered with jungle and weeds of sorts and surrounded by high grass, forest, &c. It is probably found sometimes on the open river, but this only in the cold weather and very rarely even then. As a rule, it collects in but small parties, and I should think, very probably, that these are only of the members of one family, though two or three of these may now and then join together. Its flight has been described as fast and powerful, and its voice as a musical edition of the Mallard (*A. boscas*).

As regards its food, there seems to be nothing on record beyond Mr. Shillingford's note on the gizzard of a bird he examined and found to contain "half-digested water-weeds and various kinds of small shells." This is, however, important, as it shows that it is both an animal and a vegetarian feeder.

Most writers call this a shy and wild bird, but my father (E. B. Baker), who knew the bird well, did not consider it to be either a particularly wary or wild bird, though of a very shy retiring disposition. I remember when I first came out to India, some twenty-five years ago, he had several of these birds' skins amongst his collection of Maldah bird-skins; but all these have been either lost or destroyed, and it is now so long since I last saw them that I cannot speak with certainty of the variations they showed in their plumage.

Most of these ducks had been shot by him when shooting with the late W. Reily and some of the Shillingfords in Maldah and Purneah. At the end of a day's shoot, when promiscuous firing had become the order, one or two of these ducks would often be added to the bag, getting up in front of the line of elephants as they worked through country in which there were any small pools and jhils.





THE COTTON TEAL.
Nettapus coromandelianus

J. Green, Chromo

Genus NETTAPUS.

Unlike the two last genera, the present one contains four species, though of these only one is found in Indian limits. The type of the genus is *Nettapus auritus*, which is found throughout a great part of South Africa and also in Madagascar. The other two forms, *N. pulchellus* and *N. albipennis*, are both Australian, the former being obtained in New Guinea and some other islands.

Nettapus can be distinguished from all other genera by the following characteristics being combined in it :—

Rather long hind toe, not lobed ; feet palmated ; neck short ; wing under 7 inches.

(8) NETTAPUS COROMANDELIANUS.

THE COTTON-TEAL.

Nettapus coromandelianus, *Jerdon, B. I.* iii, p. 786 ; *Butler, Str. Feath.* iv, p. 27 ; *Hume, ibid.* ; *Hume & Davison, ibid.* vi. p. 486 ; *Oates, ibid.* vii, p. 52 ; *Cripps, ibid.* p. 311 ; *Legge, B. of Cey.* p. 1066 ; *Bingham, Str. Feath.* ix, p. 198 ; *Oates, B. of Brit. Burm.* ii, p. 272 ; *Hume, Nests & Eggs* (*Oates ed.*), iii, p. 280 ; *Barnes, B. Bom.* p. 397.

Nettapus coromandelicus, *Hume, Nests & Eggs*, p. 638 ; *Hume & Mar. Game-B.* iii, pl. 14.

Nettapus coromandus, *Hume, Str. Feath.* iii, p. 192.

Nettopus coromandelianus, *Hume, Str. Feath.* vi, p. 491 ; *id.* viii, p. 114 ; *id. Cat.* no. 951 ; *Hume & Mar. Game-B.* iii, p. 101 ; *Oates, Str. Feath.* x, p. 245 ; *Salvadori, Cat. B. M.* xxvii, p. 68 ; *Young, Jour. B. N. H. S.* xii, p. 573 ; *Butler, ibid.* xiii, p. 154 ; *Mono, ibid.* xv, p. 515 ; *Parrington, ibid.* xv, p. 143 ; *Blanford, Fauna B. I.* iv, p. 433 ; *Oates, Game-B.* ii, p. 127.

Description. Adult male.—Extreme point of forehead white, remainder and crown brown, the lateral edges much darker, almost black ; a complete broad collar round the base of the neck black, a little glossed with green ; remainder of head, neck, lower plumage, and a collar behind the black collar white ; flanks most minutely stippled and more or less barred with light brown, sometimes almost absent ; under tail-coverts broadly barred and tipped or subtipped brown ; scapulars and back dark brown, completely overlaid with dark green gloss slightly mixed with purple ; upper tail-coverts dirty white freckled with brown. Innermost secondaries brown glossed with purple ; remaining secondaries

glossed green and tipped with white; primaries glossy green tipped brown, and with a broad white band continuing the bar made by the white tips of the secondaries; tail brown; bill, legs, and feet black, the two latter more or less tinged with slaty yellow; irides bright crimson-red.

"Sides of tarsus and toes dusty-yellow; claws horny-brown." (*Oates.*)

Length 12·5 to 13·5 inches, wing 6 to 7 (rarely over 6·6 or under 6·3), tail about 3, culmen about ·9 to ·95, tarsus 1.

Weight between 9 and 12 ozs.

Female.—Cap as in the male, but uniform brown; forehead more broadly speckled with brown; a deep brown line running through eye; remainder of lower plumage and head white, the breast and lower neck with narrow bars of dark brown taking the place of the collar in the male; face and neck much vermiculated with brown, and the flanks both barred and speckled with the same. In old females the abdomen and centre of the breast are pure white, in younger birds more or less marked with brown; outer secondaries broadly and inner primaries very narrowly tipped with white; remainder of wings, upper plumage, and tail brown, the scapulars and back being occasionally faintly glossed, upper tail-coverts finely stippled, with white.

Bill brown, dark olive, paler and yellowish on mandible, commissure, and gape; iris red-brown; legs and feet dull slate-yellow, more or less smudged with blackish-green; claws light yellow-brown.

Length about 12 inches, wing 6 or a trifle over, tail about 2·75, culmen about 0·9, tarsus nearly 1.

Male in winter.—"Similar to the female, but always retains the conspicuous white patch on the primaries." (*Salvadori.*)

Does this little duck always assume a winter plumage when fully adult? I doubt it, for I have males shot in winter just as glossy and fully plumaged as any to be obtained during the breeding-season and hot weather.

Young.—Like the female, but even more striped about the head with brown, and also more banded with light brown on the flanks.

Young in down.—"Upper parts, flanks, and under tail-coverts blackish brown; a broad superciliary stripe, cheeks, throat, front neck, and breast white; a brown line through the eyes; two broad white spots on each side of the back, one near the base of the wings, and the other, much longer, on the sides of the rump; feathers of the tail blackish, very long and stiff." (*Salvadori.*)

The Cotton-Teal is found almost throughout India, Burma, and Ceylon, and extends also to China and the Philippines, Sunda Islands, and the Celebes.

In India proper it may be said to have its stronghold in Eastern Bengal, is still very common in Western Bengal and Assam, less so in the Eastern Punjab and Rajputana, especially so in cold weather, and actually rare towards the west of the Empire. Barnes says that it is not found either in Guzerat or Scind, but it has been recorded from both places since his book was written.

Mr. J. W. Carrington records having shot it near Sujawal in Scind, and Mr. E. L. Barton records the following from Guzerat :—

| | | |
|-------|--|----------------|
| 1897. | On 17th January, at Pardi, Surat | 5 Cotton-Teal. |
| „ | „ 24th „ „ „ | 1 „ |
| „ | „ 13th February „ „ | 9 „ |
| 1898. | „ 18th December, at Lohderea, Ahmedabad. | 1 „ |
| „ | „ 23rd „ at Abdura | 1 „ |

E. H. Young reports it as occurring in fair numbers in the Panch Mahals, and it is also reported from Guzual by A. H. Mene.

In Orissa they are common enough, and in parts of Madras fairly so ; from Malabar I can find no record of its occurrence, though I believe there is one somewhere could I only remember it. In Ceylon it appears to be more or less confined to the north and east of the island.

Legge writes (‘ Birds of Ceylon,’ p. 1067) : “ This pretty little bird is common in the tanks of the northern and eastern parts of the island, breeding in many secluded spots, and moving about considerably during the rainy weather. To the Western Province and south-west of the island it is apparently chiefly a N.E. monsoon migrant, as about Christmas-time it is met with on the Kotte and Kresbawa lakes and other similar sheets of water.”

In Burmah it appears to be found everywhere as far south as Tenasserim and Tavoy.

Butler reports it in his list of Andaman birds as having been obtained by G. Wardlaw-Ramsay and Captain Wimberley.

In certain of the drier portions of its habitat this bird is semi-migratory in its habits, only visiting them in the rains, and leaving again for some more suitable place as the haunts in the former begin to dry up.

Hume, referring to the vast numbers seen every day during the cold weather in the Calcutta market, says it is a mystery to him where they come from. Having myself shot over some of the vast bhils and backwaters of the Ganges and Brahmapootra, I think it would take a very large number indeed to surprise me. In the places mentioned they simply swarm in thousands and are only outnumbered by the Whistling-Teals. I suppose everyone knows how the fishermen of the Sunderbuns and other parts net the vast numbers of duck that are daily sent into the Calcutta market ; but in case there are some who do not, the following may explain. Over a great stretch of shallow bhil they erect nets some fifteen to twenty feet high, usually selecting the end of a large patch of water where it

narrows off either into dry land or again widens out into yet another bhal. Then by night they pole silently up the lake towards the nets, driving the flocks of duck and teal silently before them, nor is any noise raised until an approach has been made to within some 200 yards or even less of the nets. Thus when the shouts are started many of the flocks have not time to rise high enough to evade the nets, into which they fly and are entangled. Cotton-Teal, of course, fly low along the surface of the water, and hence fall victims to the nets more easily than such ducks as get quickly into the air and fly high. On the Moolna Bhal I am sure forty or fifty couple might be shot in a day by a single gun without any very great trouble or luck ; but in Bengal very few sportsmen except such as shoot for quantity alone consider them game, and Cotton-Teal are left alone, unless when required as food for servants, boatmen, or coolies, who like their flesh and eat it greedily, preferring them to more delicately flavoured ducks. They breed in great numbers in these vast sheets of water on the little islands which are dotted about in all directions, and which contain from three or four up to a hundred trees or so. Nor are they much molested when breeding, though now and then the miserable fishermen, who are the only inhabitants of these watery, fever-stricken parts, may take a clutch or two of eggs as food. In different parts of India their habits also vary very much. Hume writes : "Tame and familiar little birds, village ponds, at any rate where singhara are grown, seem to be just as much affected as more secluded pieces of water. You may often see half a dozen dabbling about in the water and weeds within ten yards of the spot where the village washerman is noisily thrashing the clothes of the community, *more suo*, on large stones or ribbed pieces of wood, as if his one object in life was to knock everything into rags at the earliest possible moment. Even the loud half grunt, half groan, with which he relieves his feelings after each mighty thwack has no terror for these little birds."

The habitat of these remarkably domesticated Cotton-Teal is not mentioned by Hume ; but in Rungpore, though not quite so tame as the above description shows them to be in some places, they take little notice of passers by unless very closely approached. They squat in the roadside ditches and tanks, and, when finally leaving them, scuttle away, chattering and clucking for all they are worth, as if trying whether they could vociferate harder than fly, or *vice versâ*, often only to return to some spot within fifty or sixty yards of that just left. Their flight is decidedly quick as well as fast, and they dodge round corners and avoid stumps and

other obstructions which come in their way as they fly down the wayside drains and ditches with an activity quite wonderful. In addition to their speed of flight they are very densely plumaged and tough, and carry off a wonderful lot of shot for so small a bird. In the Sunderbuns they are found alike in the very biggest and broadest stretches of water as in the smallest; only in the former they keep much to weedy places with thick cover adjacent. In Rungpore, Furreedpore, Barisal, and adjoining districts they keep more to small tanks, ditches, and enclosed bhils than to the larger, more open pieces of water; and this is said to be their practice in most other parts of their habitat. Legge says that they frequent sometimes the flooded lands close to the sea-shore.

I have generally observed them in rather small flocks, seldom more than about twenty, and more often under than over a dozen—that is to say, in family-parties only; other observers, however, speak of finding them in larger flocks, so I suppose that often the families collect together, and on one occasion in Dibrugarh I saw a flock of fully 100 birds.

The only district in which I have personally found and taken their nests in any number is Rungpore. I was there once for three or four months in the rains, and I am sure that at that time a short walk of two or three miles in any direction, along any road, would have been productive of three or four nests of Cotton-Teal, as well perhaps of one or two of Whistling-Teal. The District and Station roads are well off for fine large trees, forming complete avenues on many of them, and most of them have large drains on either side, or else a succession of borrow-pits take their place. These, long disused, have naturally become well covered with weeds and grasses, and form grand hunting-grounds for this little duck, whilst the numerous hollows in the old trees which overhang them afford sites for building in. I think they generally select hollows of some size in the trunk of the tree itself, and at about 6 to 12 feet from the ground, and this hollow they line well and abundantly with twigs, grass, and feathers. I have twice known as many as 22 eggs laid, once 18, and once 16, but, normally, I should say they lay any number from 8 to 14, 10 being perhaps the number more often laid than any other. I have never known them make any other sort of nest than this already described, but others have recorded quite different stories regarding their nidification. Blewitt, writing from Jhansi, says: "It breeds in July and August. Just above the village of Borogaon is a large lake, from which several eggs of this goslet were brought. The eggs were collected in two months on different occasions. It makes a semi-floating nest on the water among

the rushes or lotus weeds, of weeds, grass, &c., all together, filled up several inches above the water-level.

"The many boatmen of this lake stated that this goslet breeds there every year, and at the Salbuhut Lake also the boatmen affirmed the same."

I have found nests quite low down, in trees only just above water-level in fact, but have never taken them from a hole at any height from the ground, and cannot now recall to mind any which were over 15 or 16 feet from it. They do, however, sometimes select very lofty situations, for Oates took one nest containing 10 eggs from a mango tree about 30 feet above the ground. They are said also to breed sometimes in old ruins, broken-down walls, &c. Cripps says: "They even lay their eggs in the factory chimney holes." They do not always make use of places quite close to water, as a pair of these birds laid their eggs in a gigantic tree standing in the Magistrate's compound in Rungpore. At the back of the house there was a good-sized tank, frequented by a pair of these birds, and as they were so constantly present, I hunted all round the tank, in every tree, for the nest. However, it was not to be found, though holes and hollows which looked suitable for nesting-purposes were common enough. Eventually I found the nest by accident in a tree in front of the house and full two hundred yards from the tank. This was one of the nests already mentioned, which contained 22 eggs. I watched this nest very carefully, and on the sixteenth day after it was found the chicks were hatched, and I then waited anxiously to see how they would get to the water. They remained in the nest that day, but the following morning, though I was out very soon after daybreak, they were all in the tank, 15 out of the 22, 7 eggs being addled, which I took. It was a great disappointment not seeing the goslings taken from the nest to the water, and I have never yet seen it done. A very intelligent native once told me that early one morning, before it was light, he was fishing in a tank, or rather looking to his nets which had been put down overnight, when he saw something flutter heavily into the water from a tree in front of him and some twenty paces distant. The bird returned to the tree, and again with much beating of the wings fluttered down to the surface of the tank, and this performance was repeated again and again at intervals of some minutes. At first he could only make out that the cause of the commotion was a bird of some kind, but after a few minutes he, remaining crouched among the reeds and bushes, saw distinctly that it was a Cotton-Teal, and that each time it flopped into the water and rose again it left a gosling behind it. These, he said, he could see were carried somehow in the feet,

but the parent bird seemed to find the carriage of its young no easy matter, and flew with some difficulty, and fell into the water with some force. I do not vouch for this man's story being true, but give it for what it is worth, and believe it myself.

They breed in Bengal in late June, July, and August, the end of July principally. In Ceylon they are said to breed much earlier, but there, of course, their weather arrangements are different, and the birds of all kinds have to make their nesting-time suit accordingly.

The eggs are true duck eggs, though more spherical than most, much like those of *Dendrocygna* in shape, texture, and polish. Oates calls them miniatures of those of the Comb-Duck, but says they are less glossy.

They vary in length between 1.5 and 1.8 inches, and in breadth between 1.17 and 1.41 inches. The average of 40 eggs, including the 26 mentioned in Hume's 'Nests and Eggs,' is exactly 1.7 by 1.3 inches.

Cripps, in blowing an egg of this bird, noticed that the drops as they fell on to a pucca floor appeared phosphorescent. He could give no reason for this, but the fact that they did so certainly deserved mention in any article on the Cotton-Teal.

The Cotton-Teal has often been unjustly accused of being unable to progress on land. I do not know how this idea was started, but it is quite without reason. Mr. Finn, of the Indian Museum, Calcutta, states that his birds, which he had in captivity, walked perfectly well, and suggests that the idea arose from people seeing wounded birds shuffling along. I think there may be, however, another explanation. I had once a pair of Cotton-Teal tame, and these birds were allowed to wander about where they liked, though I had to keep one wing clipped or they might have wandered too far and got shot. Now, under ordinary circumstances, the two little birds waddled about in complete comfort, though without any undue speed. Under the effects of excitement, however, whether pleasurable or frightened, they attempted to hurry themselves, and at once flopped about in the most ludicrous fashion, tumbling over every little obstruction they met with, and appearing as if their hind-quarters were going too fast for their heads and breasts to keep in front.

Genus *ÆX*.

According to the British Museum Catalogue the Mandarin Duck is included in the Plectropterinae, and the key is as follows :—

No comb on base of bill.

Head crested *Æx*.

Both Ogilvie-Grant and E. Oates, however, pointed out to me that a far better generic character is provided in the silver-grey edging to the primaries, a character by which it may be at once distinguished from any other Indian Duck.

(9) *ÆX GALERICULATA*.

THE MANDARIN DUCK.

Anas galericulata, *Lath. Ind. Orn.* ii, p. 871.

Aix galericulata, *Gould, B. Asia*, vii, p. 89; *Oates, Game-B.* ii, p. 136:

Finn, Fancy Water-Fowl, p. 26; *Bennett, Wanderings in New South Wales*, ii, p. 62; *Latham, Syn.* iii, p. 548.

Æx galericulata, *Salvadori, Cat. B. M.* xxvii, p. 76.

Description. **Adult male.**—Supercilium from the base of the bill to the end of the crest pure white; forehead to nape glossy green, thence the long thick crest is metallic purple, more or less mixed with green on the basal half and entirely green on the terminal third, which is sometimes shot with deep blue; face and sides of the head buff, shading into white round the eye and into cinnamon-red on the posterior cheek, chin, and throat; the neck-hackles are bright chestnut, tipped with purple and white striæ on the anterior portion; remainder of upper plumage and lesser wing-coverts dull brown glossed with bronzed green, especially on the mantle and upper tail-coverts; tail grey-brown glossed green. Lower neck and sides of breast brilliant purple-copper; sides of lower breast with three bands of black and two of white; remainder of lower parts white; flanks vermiculated black and brown, but with copper bars opposite the vent and with black and white bars at the end of the flank-feathers. Scapulars grey-brown, the innermost completely glossed with deep blue and the median with green, the change being graded and not clearly defined; the outermost are white with broad black edges. The innermost secondary, which is enormously broadened into a fan shape, is chestnut on the inner web, tipped paler on the outer half and with blue on the inner, on the outer web of the secondary the tip is chestnut, the remainder deep glossy blue; other secondaries

brown, with the outer web glossed green and tipped white, except that next the innermost one, which is all of this colour; primaries brown, glossed green, and with broad edges of silver-grey on the outer webs. Axillaries brown; under wing-coverts mixed brown and grey.

"Iris dark brown with a yellowish-white outer ring; bill reddish-brown, with the nail bluish flesh-coloured; tarsus and toes reddish-yellow, membranes blackish." (*Schrenk.*)

Wing 8·8 to 9·4 inches; tail 4·2 to 4·6; bill, culmen 1·1 to 1·25, from gape 1·5 to 1·45; tarsus 1·3 to 1·4; length about 16 to 18.

In one specimen in the British Museum the whole chin, and in another the border of the angle of the chin, is white.

Adult female.—Head and full crest grey, a narrow line starting above the eye and passing round the front to the back and bordering the crown white; sides of the head pale grey, grading into the white of the chin, throat, and upper neck; the face is sometimes broadly white and sometimes wholly grey, and at other times there is a broad or narrow band of white next the bill; whole remaining upper parts and wing-coverts brown, more or less tinged with grey or olive-green; lower neck, breast, sides, and flanks the same colour as the back, each feather with a pale spot near the tip, these being very large on the flank; remainder of lower parts white; primaries brown, slightly glossed green and broadly tipped white, two of the inner secondaries forming a deep blue-green speculum, submargined black and margined white; innermost secondaries the same colour as the back.

As with other ducks with white underparts, these are often more or less tinged with rusty.

Wing about 8 inches; tail about 4; bill, culmen 1·05 to 1·20, from gape 1·2 to 1·32; tarsus 1·2 to 1·3.

The male in post-nuptial plumage resembles the female, but this sex, as Oates points out, "may be separated from males . . . by the oblique white stripe which may always be found on the outer web of the first purple feather of the speculum. This stripe is just below the tips of the wing-coverts and is always absent in the male." The young male in first plumage also resembles the female with the exception just noted; it is, however, generally rather bigger and often more clearly coloured.

Amongst the first indications of sex plumage assumed by the young male is the deepening of the plumage of the breast and upper neck. A specimen (*b*) in the British Museum collection shows this beautifully, and looks much as if the change here undergone was one of coloration in the feathers themselves.

The same bird has the broad secondary partially developed, but has no white edging to the outer web, so presumably this is not assumed until the second year; this feather is also not so much falcated as in the adult bird. The adult coloration of the scapulars is only indicated by a few blue tints, but the black and white bars on the sides of the breast are well advanced.

Nestling.—Above hair-brown, the edge of the wing pale buff and two indefinite bars of the same colour on the sides, one in front and one behind the thigh. Underparts wholly pale buff; a dark brown streak running from behind the eye to the neck and another from behind the ear-coverts.

The only other species in the genus is the American species *Æ. sponsa* (the Summer Duck). In this the male has the crest all green and the female differs from the female of *Æ. galericulata* in having the head and upper parts glossed with purple. The bill also is differently formed in both sexes, being deeper at the base, and in *sponsa* the upper angle of the maxilla runs far back into the forehead, whereas in the Mandarin the line from gape to upper edge is practically straight.

The Mandarin is a purely Eastern Asiatic duck, being distributed, according to Salvadori, throughout "Central and Southern China, Formosa and Japan; Amoorland only during the breeding-season." It has also been obtained in Corea, and now at last in India.

It is not long since Oates wrote: "This beautiful duck is not unlikely to be met with on the borders of the Shan States"; but it has now been obtained far more west—in Assam.

Mr. A. Stevens, who shot the bird and most kindly presented it to me, tells me, *in epistola*, how he managed to get it. He writes: "Early one dull morning I went in a dug-out down the Dribu River on a collecting trip. The Dribu, then at low water, is a small stream varying between twenty and fifty yards wide, here and there dotted with sandy banks and islands, but for the most part densely covered with jungle down to the water's edge. Twice single specimens of *Asarcornis scutulata* (the White-winged Wood-Duck) passed down the river on the way to their favourite haunt and held forth hopes of something good to be had later on. I had gone some two miles down the river and had come to a place where it widened out and then divided into two branches. Here there was a small sandy chur (bank), and on this I saw six ducks, but what they were I was still too far off to determine. Four of the ducks were close together, two a little apart, but all six appeared to me to be exactly identical in size and coloration. Selecting the two birds which were the nearer to me I fired both barrels at them, upon which all six birds rose and flew ahead. I was certain, however, that my shots had told; nor was I wrong, for one bird, after flying some forty yards, dropped into the water. Picking the bird up I at once recognized that it was something new to me, but at the same time had no idea of the value of what I had got. Consequently, although I repeatedly flushed the pair to this bird, I made no attempt to shoot it, even though it got up well within range and gave me easy shots.

"The birds, when first flushed, flew away strong and low, but the single bird which I afterwards put up reminded me of the stupid performance of the Little Green Bittern (*Butoroides javanica*) in the way it flew from the

bank and across and down stream, only instead of selecting a small tree to perch on, he always managed to drop into the long elephant-grass, which, with other jungle, bordered the stream.

"We found the flesh of this bird very coarse, a fact which saved the pair on several occasions afterwards when I saw it. Afterwards, when I learnt the value of my acquisition, I of course never again saw it."

This is the only occasion on which the Mandarin has actually been obtained in India beyond all doubt.

I was, however, once told by a sportsman that he had shot a Marbled Teal in Assam, and when asked to describe it he gave a very minute and accurate description of the female Mandarin. This bird had been shot by him near Margherita, in the Dibrugarh district of Assam, the same district as that in which Mr. Stevens shot his bird.

Again, Mr. Gruning, I.C.S., and myself saw six birds on the River Ranganadi, which I am sure were of this species. We were going along in a small launch, and the birds flew across us so close that we could see their silver-grey heads and the clear white speculum; unfortunately we had no guns ready, and the birds flew straight away. Their flight was very strong and quick, much like that of *Nettion crecca* (the Common Teal), but less swift than that of that bird.

This splendid little duck is one far better known in a captive than in a wild state. Long ago Latham wrote: "We do not find it near so common in China as many other birds . . . and the common price is from six to ten dollars a pair . . . nor can they be bred in this country."

Blakiston and Pryer, in the 'Ibis' (1878, p. 213), state: "Very common on small streams. It formerly built in the trees in Uyino Park, Tokio. Breeds in Yezo."

It seems to be a duck which keeps much to small streams, more especially such as run through forest, but at the same time to prefer such streams as are clear rather than slow sluggish backwaters and weedy pools. It is usually to be found in small flocks, seldom exceeding a dozen and very often less, even in the countries where it is most common, so that very small flocks are all we can expect to meet with in India.

It is a stout, sturdy, strong little bird, equally good on water, land, and air; its flight is direct and strong, similar, though inferior, to that of *Nettion crecca*; it walks well and quickly, and swims with a jaunty carriage, getting over the water at a great pace. I can find nothing on record about its powers of diving, but, judging from its shape and plumage these are not likely to be of the best.

Schrenk says that when in Amoor, about May to August, they are very wild and shy, not allowing an approach within gun-shot; he also states that they perch freely on trees. This is confirmed by all other observers; indeed, Finn ('Fancy Water-Fowl') says that the Mandarin perches as readily as a pigeon.

This same naturalist, one of our best observers and a specialist on water-fowl, remarks:—"Another attractive point about this lovely duck is that he, more than any other duck, is a bird of position and much given to showing himself off by raising his crest and slightly expanding his wings vertically, so as to bring the wing-fans perpendicular and to display the beautifully striped flights, while when standing he often curves his neck back and throws out his breast like a fan-tail pigeon. He certainly looks at such times as if he were conscious of his beauty, and his little brown mate, as she caresses his orange hackles, must surely admire him.

"He is a great fighter, and will even kill ducks of his own kind should he not approve of them."

In spite of their pugnacity, however, they have a reputation in China for being wonderfully faithful little birds to each other. Indeed, Canel says (p. 155) that "a pair of these birds are frequently placed in a gaily decorated cage, and carried in their marriage processions, and are afterwards presented to the bride and bridegroom as worthy objects of their emulation."

The same author, in describing their flight, writes: "Whilst on the wing these parties crowd closely together in front, whilst the birds in the rear occupy a comparatively free space."

As regards their nidification very little is known; it seems to breed everywhere throughout the north of its range, perhaps also wherever it is found. It appears, however, to visit the Amoor and the more northern extremes of its habitat only during the breeding-season, so that it is probably locally migratory. It is one of the species of ducks which build in trees, and in captivity breeds very freely.

W. Evans in the 'Ibis' (1891, p. 73), giving the period of incubation for various birds, gives that of this duck as 30 days, whilst Finn gives it as 26. In the Zoological Gardens up to 1874, the Mandarin had hatched eggs no less than twenty-six times, the earliest date for the young to appear being the 31st May, 1858, and the latest July 16th, 1874. As the normal climate in which the duck breeds is not unlike ours, except in the extreme north, these dates will probably coincide with its breeding-season when in its natural state.

The British Museum possesses five eggs of *Æx galericulata*, which measure 2.2×1.6 inches, 2.15×1.54 , 2.15×1.6 , 2.08×1.56 , and 2.16×1.52 . In shape these eggs are very regular ellipses, and slightly compressed at one end. The texture is smooth and close and distinctly glossy, and the colour is a very pale fawn or yellowish-white. One egg was originally, perhaps, rather darker in colour than the rest, but is so soiled that it is difficult to say with any certainty. All these eggs were laid by birds in captivity. The eggs in my own collection agree well with these, but are rather more clearly coloured, perhaps because fresher when blown. Their dimensions agree with those given above.

Subfamily ANSERINÆ.

This subfamily contains, according to Salvadori, six genera, but other systematists have further considerably divided this again.

Thus the Bar-headed Goose has been placed in a genus, *Eulabeia* (Reichenbach), by itself, and the Bean-Geese have been separated from other geese and called generically *Melanonyx* (Buturlin). The only other genus which interests Indian sportsmen and ornithologists is *Branta* or *Rufibrenta*, of which one species, *ruficollis*, undoubtedly visits our limits.

The only genera we need recognise for the purpose of this work are *Anser* and *Rufibrenta*, and I propose to deal with Alphéraky's *Anser*, *Melanonyx*, and *Eulabeia*, all under the former title. The generic differences, if they *do* amount to such, are very slight, and there appears to be no need to confuse readers more than can be helped.

The distinctive features of the subfamily are : hind toe not lobed and moderate in length, as is the neck, the feet are palmated, and there is no cere.

As regards India, the following key to the genera will suffice :—

Neck and breast with no bright rufous coloration *Anser*.
Neck and breast extensively coloured with bright rufous *Rufibrenta*.

Since the article dealing with the true Geese appeared in the Bombay N. H. S. Journal, certain specimens of Geese have been obtained, of which two species, *Anser brachyrhynchus* and *Anser middendorffi*, have been satisfactorily identified, and others of which the identity has not been *absolutely* made out, but which I have dealt with under the headings to which I *believe* they belong; also *Rufibrenta ruficollis*, although not actually obtained, has been sufficiently well identified to allow us to include it in the Indian avifauna.

The Bean-Geese have been dealt with at great length by Alphéraky in his magnificent monograph of 'The Geese of Russia and Asia,' and, because of the mass of material he has had at his disposal, and the length of time and study he has devoted to the subject, the results he arrives at will probably be eventually found to more closely approach correctness than the attempts of other ornithologists, who have not had the same

advantages. At the same time, it is more than possible that even Alphéraky will modify much that he has now written, and other species and subspecies *may* be created, and some of those now accepted done away with.

In India we *may* meet with specimens of many of the Bean-Geese, and for this reason I have, in my key to the Anseres, included several forms of which we have, as yet, no record.

Genus ANSER.

The only Indian Goose which has a red breast belongs to the genus *Rufibrenta*, and cannot be confused with any of the birds of this genus, which are all coloured with black and white and the intermediate shades.

Key to Species.

- A. Head with two black bands *A. indicus*.
- B. Head with no black bands.
 - a. Nail of maxilla white or nearly so.
 - a'. No white or very little white on forehead. Rump grey *A. rubrirostris*.
 - b'. A good deal of white on forehead, round base of bill. Rump dark greyish-brown.
 - a''. Wing over 15 inches *A. albifrons*.
 - b''. Wing under 15 inches *A. erythropus*.
 - b. Nail of maxilla black or nearly so.
 - c'. Margin of wing ashy blue-grey, upper wing-coverts light slaty-grey *A. brachyrhynchus*.
 - d'. Margin of wing and wing-coverts dark brown or blackish-brown.
 - a''. Pale-coloured parts of bill rose-pink *A. neglectus*.
 - b''. Pale-coloured parts of bill vermilion *A. carneirostris*.
 - c''. Pale-coloured parts of bill yellow.
 - a'''. Nail less than quarter length of culmen.
 - a'''. Culmen 1·88 to 2·40 inches *A. segetum*.
 - b'''. Culmen 2·44 to 2·83 inches *A. serrirostris*.
 - b'''. Nail more than quarter length of culmen.
 - c'''. Culmen 2·16 to 2·83 inches *A. arvensis*.
 - d'''. Culmen 2·91 to 3·26 inches *A. middendorffi*.

The above is admittedly only a very rough key, but should suffice to

enable sportsmen to discriminate between their specimens, should they be so fortunate as to obtain any of the rarer species.

Considerable discussion has been carried on in the pages of the 'Bombay Journal' in regard to the Bean-Geese, between Alphéraky, Buturlin, and Oates, and those who wish to study the question should consult pp. 38, 598, and 950 of vol. xvii. of that journal.

Anser segetum and *Anser arvensis* are probably western forms, hardly likely to be found within Indian limits; but as it is within the bounds of possibility that they *may* be so found, I have included them in the key.

Carneirostris may or may not be a good species, it may even be Swinhoe's true *serrirostris*, but the material available (four specimens) is insufficient to allow this point to be decided.

As regards *A. oatesi*, the distinction of this species still also requires further confirmation.

A. brachyrhynchus may be at once distinguished from all other geese by its grey coverts, and although the first pink-footed goose found by me was undoubtedly of this species, there is no chance of its occurrence being anything but extremely rare in India, and we should expect it in the N.W. rather than in the N.E. On the other hand, there is not the slightest reason why *serrirostris*, *neglectus*, and *middendorffi* should not be frequently reported within our borders.

Any sportsman who may obtain a Bean-Goose, *i. e.* a goose with a black nail to its bill, should at once forward the whole skin, if possible—if not, the head and neck,—to the Bombay Natural History Society for identification. He should note in detail the colorations of the bill and feet immediately he gets it; and if the colours of the former change after death should note this also. The length of the wing should also be added.

(10) ANSER RUBRIROSTRIS.

THE INDIAN GREY LAG GOOSE.

Anser cinereus, *Jerdon, B. I.* iii, p. 779; *Hume, Str. Feath.* i, p. 258; *id. Nests & Eggs*, p. 635; *Butler, Str. Feath.* iv, p. 26; *Scully, ibid.* p. 199; *Hume, Str. Feath.* vii, p. 491; viii, p. 114; *Hume, Cat.* no. 945; *Hume & Mar. Game-B.* iii, p. 50; *Hume, Nests & Eggs (Oates ed.)*, iii, p. 279; *Barnes, B. of Bom.* p. 945.

Anser rubrirostris, *Salvadori, Cat. B. M.* xxvii, p. 91.

Anser ferus, *Blanford, Fauna B. I.* iv, p. 410.

Anser anser, *Oates, Game-B.* ii, p. 42; *Alphéraky, Geese*, p. 24.

Description. **Adult male.**—Lower back and rump French-grey; upper tail-coverts white; remainder of upper plumage, head, and neck ash-brown, the scapularies edged lighter; a very narrow white rim of feathers at the base of the bill; lower neck in front, breast, and abdomen pale greyish-brown; the abdomen with more or less broad blackish spots, sometimes almost confluent, at others almost absent; remainder of lower plumage white; flanks brown, tipped pale French-grey, more grey at the bases of the feathers; shoulder of wing and smaller coverts next it, winglet, primaries at the base, and primary-coverts French-grey; remainder of wings brown, the secondary coverts edged whitish; under wing-coverts and axillaries French-grey; two outer pairs of tail-feathers white, the central ones brown, tipped white, and the others brownish at the base changing to white at the tip.

The irides are always brown; the nail of the bill sullied white, generally yellowish or pinkish-white; the bill, legs, and feet vary from creamy-white, with only, in places, a faint tinge of pink, through pale somewhat livid fleshy-pink to a dingy-livid purplish-red, and very often the bill is of one shade, the legs and feet of another. Never, in any of the innumerable specimens that I have examined in India, have the bills had any orange or yellow tint about them (*Hume*). "Length about 33 inches, wing 18, tail 6·5, culmen 2·7, tarsus 3·2" (*Salvadori*).

Female.—Only differs in being smaller. *Scully*, 'Stray Feathers' (*loc. cit.*), gives the measurements of the female as follows:—"Length 31 inches, tail 6, tarsus 3, bill from gape 9·7."

The young are far less marked underneath, and the majority of birds shot in India will be found nearly white underneath. In the same place as that in which he gives the above dimensions for a female, *Scully* gives others of a young bird:—"Length 30·5 inches, expanse 60·25, wing 16·5, tail 6·3, tarsus 3, bill from gape 2·65. Weight 5 lbs. 10 ozs."

This bird is said to differ from *Anser ferus* (the Common Wild Goose) in being rather larger and with proportionately larger bill and feet, and the adult bird is also more marked with black on the underparts, though this last distinction does not hold good with most Indian specimens.

Alphéraky, in his beautiful book on European and Asiatic Geese, shows that our Indian form of Grey Lag is *not* entitled to a separate specific name, nor does he even consider it worthy of subspecific rank. He writes that he is unable to find any points differing sufficiently constantly to enable him to divide the two forms.

Weight and size he shows to be of no value, for whereas the normal Indian bird—this must be *rubrirostris*, if there is such a bird—weighs only some 6 to $8\frac{1}{2}$ lbs., Naumann gives the weight of a Western European specimen as being $16\frac{1}{2}$ lbs.

Richness of plumage may be admitted as individual, not specific at all.

This leaves only the *comparative* size of the bill and the coloration of the soft parts as a means of differentiation considered hitherto by naturalists.

The bill is said to be proportionately longer in the Eastern than in the Western form, and the feet and bill more deeply tinged with pink. Personally I cannot discriminate between the two forms; but I incline to think that the bill of *rubrirostris* is a deeper flesh-colour than in *ferus*, and I also think that the Eastern form is a larger, lighter built *bird with a wing decidedly longer in proportion to its weight*, for we see Hume's birds of 6 lbs. to $8\frac{1}{2}$ lbs. with wings of 18 inches upwards, whilst birds of this weight in Western Europe have wings of 16 inches. This is a question which, however, must be threshed out after the examination of far more material than I can at present command, and I shall therefore let the name stand as *rubrirostris* in this work.

Hume, in 'Game-Birds,' goes into the question as to whether this bird is the same as the one known in Europe as *Anser cinereus*, and he there notes the difference between the two species in his usual accurate manner, and many ornithologists do agree that the two specimens are distinct. Hodgson's name of *rubrirostris* stands good for our Indian form. Hume's distribution given in 'Game-Birds' applies, of course, to both species, and has to be greatly curtailed in its limits outside India.

It is found throughout Northern India, but it is far more numerous to the west than to the east: it extends right away throughout China; but as most of the birds are recorded as *A. cinereus*, it is difficult to say what notes apply to the true *A. cinereus* and what to our *A. rubrirostris*, though

the probability is that nearly all the Asiatic birds are the latter. It occurs in some numbers throughout Assam, but certainly is not a very common bird anywhere in that province, as far as I can ascertain, except on the Brahmapootra, when migrating north or south. Mr. Eden, however, says that it occurs in great numbers in Sylhet, in a favourable year. Probably it is in great numbers only when compared to the few found of other species.

Mr. Damant reports it to be common in Manipur, next door to Burmah; and as regards Burmah itself, Oates writes :—"It occurs on the Chindwin and Irrawaddy Rivers, and in the latter river it is abundant down to Myingyan at least."

A friend, *in epistola*, writing from Burmah, remarks : "I cannot think how it is that the Grey Lag has not yet been recorded from Burmah. I found it in thousands on the Irrawaddy, and also on some large bheels, a considerable distance from the banks of the river." I have shot one or two pairs in the Sunderbuns, but have seen very few birds indeed in that part of the country, and, I think, east of Calcutta it is decidedly rare ; indeed it is not common even in the Calcutta markets, which are a veritable bird-mine for the ornithologist in the right season, when the rarer edible birds sometimes put in an appearance.

In Assam, except in the Brahmapootra and the larger rivers, such as the Surma, &c., it goes about in only small parties of some ten or a dozen, but Cripps met with in Dacca on the Megna in a flock numbering about 200. This was the only time he noticed the Grey Lag in Dacca. As one wanders further west the flocks become more and more numerous, until in the western provinces sportsmen speak of flocks numbering their hundreds which run into thousands.

It is a bird of all elevations and is very common in Cashmere in winter, and in other similar suitable places up to 6000 feet or more.

"A Member of the Society" states that no geese are found in the Konkan, Deccan, or Khandeish, but he records an *Anser*, by which he must refer to the present species, from Gujerat ; here he says that it is not common, but others have obtained them in great numbers. Hume mentions having found flocks numbering fully 1200, and, I believe, refers to the flocks he saw in Sind.

In the British Museum Catalogue the distribution of this goose is given as "Siberia in winter, Northern India and Southern China" ; this, of course, includes all the intervening countries, at all events whilst the birds are on migration.

They breed throughout Asiatic Siberia, in Turkestan, Kashgar, probably Northern Persia, and on the Yangtse-Kiang, on which river young birds have been taken. I can find no full description of their breeding-habits, but they are not likely to differ in any way from those of *A. cinereus*, the European Grey Lag, which lays from 4 to 6 eggs (according to Oates, 6 to 12, or even 14) in a rough, rather loosely-built, nest of reeds, rushes, and grass, placed on the ground not far from water. Prjevalsky records breeding-places in S.E. Mongolia, the upper valley of the Huanyho, and in Lake Kokonoor, all of which places refer to the Asiatic form of the Grey Lag. All notices referring to Europe and North Africa must be taken as being of the true Grey Lag, *A. cinereus*, and I fancy that the majority of those in Asia Minor, if not all, will be found to be of the same.

They generally arrive in India in October, but do not get far south or east until the end of November; about Calcutta and east of that they appear to come in in early and middle December. Of course everywhere they sometimes come in much earlier, and they have been recorded in the north-west in September. In the same way, though they all have left India, as a rule, by the end of March, yet sometimes they stay far later; for instance, only lately, in the Bombay N. H. S. Journal, Colonel Unwin has reported receiving four "Grey Lag Geese" (*A. cinereus*) as late as the 2nd May in Cashmere. It will be interesting, as he says, to see if they do stay and breed; but I am afraid that there is little chance of it, as their breeding-haunts are not far off, and they are sure to return there. Adams did state that they bred in Ladakh, but his remarks have never been confirmed, and it seems he must have been mistaken.

After Hume's long notes on shooting geese given in 'Game-Birds' it is very difficult to say anything more of any interest. As every sportsman knows, they are shy, wild birds, and difficult to bring to bag; but their wildness varies much, according to how much the localities in which they reside are shot over. Where many of the natives have guns, and there are also many European sportsmen, the Grey Lag, and every other kind of goose, is an object as worthy of a stalk as any black buck. In such places, it is little use going out to collect a bag of geese unless one has really made up his mind to work the business out properly. If there are any young crops of wheat, &c., in the district the sportsman should be out before daybreak, and he then may, by a careful crawl through grass and wheat, wet with dew and very cold—it can be cold even in India,—get within easy shot of the birds as they feed on the young growth. If wise, he will blaze one barrel into the brown as they feed and get what he can

with his second barrel as they rise ; if, however, he is very near indeed, it is better to wait and have both barrels into them on the wing. They take some time getting on way after rising, and give lots of time to put in two shots, and more birds will be dropped in this way than if the unspreed shot had taken them on the ground. Hume also mentions stalking them under a blanket, and beguiling the geese into a belief that you are an inoffensive native just out for a prow ; where, however, the natives have a gun, the geese will undoubtedly “wink the other eye” and, blanket or no blanket, leave long before that article is brought within shooting distance. A bullock is more useful than a blanket under such circumstances, and from behind the shelter of one much slaughter may be done if the animal is properly worked.

Hume says that they are easily killed during the daytime on all the large rivers. I have not found this to be the case myself, but as his experience is fully ten times what mine is, the sportsman had better follow his advice and not mine. He says :—“During the hotter parts of the day they are, as already mentioned, generally found in larger or smaller parties dozing in the sun on some sandbank, at the water’s edge. Directly such a party is sighted you take a small boat, and, with the aid of a couple of experienced men, row or punt noiselessly down to another two or three hundred yards of the birds, when, if the water is shallow enough to allow it (and the boatmen seem to know this by instinct), one man gets quietly out of the boat behind, and, while you and your companion in the boat lie down out of sight, he, stooping so as to be entirely concealed by the boat, pushes it down gently and noiselessly, aided by the stream, towards the flock. In this way you may approach, if all is well managed, to within twenty yards of even cranes. You make some arrangement at the bows (I had a false gunwale with suitable holes pierced in it) so as to admit of peeping and shooting without raising your head into view, and, when you get to what you consider the right distance, knock over as many as you can sitting, with the first shot, and as many more as you have time for, before they get out of shot, after they rise. Everything depends on judging rightly the distance for the first shot, with reference to your bore and charge. A little too far you would perhaps hit a score without bagging one ; a little too near and you kill one or two outright, and though you perhaps get one or two more as they rise, that is all ; but if you have a good heavy duck-gun, say No. 8 bore, with two ounces of A.A., and fire at about 50 yds., you will rarely get less than eight out of a good large flock of geese (and I have got as many as sixteen) with the first shot, besides a brace or so more, with green cartridge, as they rise.”

On the Brahmaputra, the only river on which I have made regular attempts to shoot them, I have found them just as wary in the middle of the day as at any other time, and no amount of care or precautions have enabled me to approach within shot, except in exceptional cases. We did, however, sometimes get within shot of them in the early morning, when the mist was still heavy on the water, and the conversational "gag, gag, gag, gag" of the geese was our only guide to their whereabouts, until we got well within shooting distance. Even then it was always necessary to shoot directly the mist rose, or we were near enough to make out their shadowy forms. Rarely good bags were made by enthusiastic sportsmen who dug holes in the sand, on some sandbank in the line of flight, and having got into these, waited for them an hour or so before dawn.

They are not much of a hand at diving, and give more trouble when wounded by struggling along out of shot. Of course they do dive, and pretty quickly, when hard pressed, but they cannot stay under water for any length of time, nor do they ever hold on to weeds below the surface of the water, as do many ducks, and so avoid the sportsman. They soon rise after diving, and seldom far from where they enter the water, so that they can be easily shot on appearing. Hume says that he has seen one goose taken off by a crocodile; but if he had shot more on the tidal waters on the Bengal side, where the snub-nosed man-eating brute has his abode, I am sure he would have seen many a fat goose and delicate duck disappear down their wide maws. Any big bird not recovered almost as soon as shot is just as likely to form a *mugger's* dinner as it is to form that of the person shooting it. Although bad or rather indifferent divers, they are very good swimmers, and a broken-winged bird gets along the surface of the water with great rapidity. On the wing they are very swift when once started, and are active and graceful as well. They fly, as everyone knows, in the form of a **V**, generally one with a very obtuse point, and often with one wing longer than the other. They are noisy birds and their cacklings and cries and trumpets are, on ordinary occasions, far from soul-stirring, but, as Hume says, when on the wing, high up, the loud trumpeting calls are very sonorous and musical. Especially is this the case when, late in the evening, or in the very early dawn, the sportsman, crouched low in some ambush, waits eagerly for the welcome sound that tells of the approach of his game. To me this form of sport is very fascinating for a few hours, though I admit that it requires great patience, as it is often a long wait between the flocks as they come within reach, and often the temper is tried by the persistent way birds continue, one flock after the other, to fly past,

either to the right or left, low down, but much too far off to get a shot. When, however, the birds fly kindly, it is very pleasant to hear the constant loud calls, the swish-swish of the wings as they pass, answered by the crack of your 12-bore, and the thud of the fat birds as they kiss mother earth for the last time. Of course, in this way, your bag, of geese at all events, won't take many men to carry it, but there is no end to the variety, both of the game killed and the way of killing it. First, perhaps, come a flight of Whistlers in no formation of any sort, and you cover them with your gun, and let them go after you have made sure that you could have dropped a dozen, or if you want food for your men you do fire and drop a couple. Then a few noisy little Cotton-Teal fly past in follow-my-leader fashion, each bird anxious to get in front of the others, and each determined that no other shall pass him. Next a flight of Mallard, Pintail, or Gadwall may pass, and the loud, dull smacks on the ground that follow the report of the gun mean so many good-eating ducks. As a rule, you will know what you have got by their appearance and flight, but a Shoveller will sometimes imitate the Gadwall very closely, and the result is disappointing. A flock or two of Blue-wing or Grey Teal may now vary the sport, flying lower but even quicker than the ducks; and, last of all, in the distance, the geese will trumpet forth their approach, and after their arrival flocks of all sorts will pass in increasing numbers until it is too dark to see, and the bag collected there is nothing left but to go home. In the early morning the routine is reversed, and the geese are the first to be got, and the Whistlers and Cotton-Teal the last.

Geese are almost invariably vegetarians, and get their food by grazing, in which way large flocks will do immense damage to young crops in a single night. They are destructive birds also, owing to the fact that they pull so much of what they feed on up by the roots and thus destroy what they do not eat.

The eggs mentioned by Hume belonged, I believe, to *A. cinereus*, and not to *A. rubrirostris*, with the exception of those he obtained from Ruttun Singh, and which were laid by a tame goose. These two eggs were quite pure white, glossless, but compact, though not very fine-grained. They measured 3.55 by 2.45 inches and 3.4 by 2.25.

(11) ANSER ALBIFRONS.

THE WHITE-FRONTED GOOSE.

Anser albifrons, *Jerdon, B. I.* iii, p. 780; *Hume, Str. Feath.* viii, p. 114; *Hume, Cat.* no. 947; *Hume & Mar. Game-B.* iii, p. 73, pl. 10; *Salvadori, Cat. B. M.* xxvii, p. 92; *Blanford, Fauna B. I.* iv, p. 417; *Oates, Game-B.* ii, p. 91; *Alphéraky, Geese*, p. 42.

Anser erythropus, *Hume, Str. Feath.* i, p. 259.

Description. **Adult male.**—"Forehead and feathers at the base of the upper mandible white; head, neck, back, rump, and wings brownish ash-colour; upper tail-coverts white; breast and belly pale brownish-white, with patches and broad bars of black; sides and flanks ash-brown, with paler edgings, and with a white band on the upper margin; vent and under tail-coverts white; upper wing-coverts greyish-brown with paler edgings, the greater ones edged with white, forming a conspicuous band; wing-primaries bluish-black; secondaries black; tail-feathers dark grey, tipped with white: bill orange-yellow, the nail white; irides dark brown; legs, toes, and membranes orange, claws whitish horn-colour. Total length 27 inches, wing 16, tail 6, culmen 1·9, tarsus 2·5." (*Salvadori*.) *Jerdon* gives the wing as 17 inches; on the other hand, *Hume* gives it as 15 to 15·75 inches.

"Wing 14·75 to 17 inches, culmen 1·57 to 2·20, tarsus 2·25 to 3·20" (*Alphéraky*).

Of the soft parts, *Hume* gives the colours as follows:—Legs and feet bright orange; nails pinky or greyish-white; bill pale, livid fleshy; nail whitish or pale yellowish-white; irides pale brown.

"Bill dull flesh-colour, to a more or less rosy-red; often a very beautiful rosy tint: after death it rapidly turns into orange" (*Naumann*). "Weight: maximum 6 lbs., minimum 4 lbs., average 5½ lbs." (*Popham*).

Female only differs from the male in being rather smaller, but I can find no measurements of this goose sexed as females; but *Alphéraky* remarks: "I therefore quote the dimensions of the White-fronted Goose, without stating the sex; this being the less to be regretted, seeing that it did not seem possible to give the limits for the maximum measurements of the female, on account of the inadequate material."

Young.—"Bird of the year is more uniform in colour and rather darker; the feathers at the base of the upper mandible are rather deeper brown than those of the rest of the head; the nail and point of the beak light brown; the pale brown feathers of the breast are uniform in colour, without any dark patches or bars." (*Salvadori*.)

As the bird grows older, the white band on the forehead appears and grows wider and wider, and, from what can be gathered from present records, seems to get wider eventually in the adult male than in the female, though *Salvadori* notes



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THE WHITE-FRONTED GOOSE.
Anser albifrons.

J. Green, Chromo.



no difference in this respect. As regards the coloration of the underparts, it varies very greatly, this not according to age apparently. Some birds are so much marked with black underneath that the white is practically absent, only showing through in small patches here and there; in many the black predominates, whilst in others, the majority, the light colour is much in excess of the dark, in some few there being very little black anywhere. The white on the chin, too, increases with age, and, perhaps to a greater extent, also, on the gander than on the goose.

Young birds in first plumage.—White feathering on head entirely absent, and both on head and along base of upper mandible replaced by brown or brown-black. On light grey belly (where black patches are always wanting) fairly regularly dispersed grey speckles, resulting from the fact that the feathers have grey centres.

Anser gambeli is generally accepted as a distinct species (not by Alphéraky), so that the area inhabited by the Indian bird is now curtailed, and it does not extend to Japan, though it does to the greater part of China.

Salvadori, however, says that it is a true *A. albifrons* which inhabits Greenland, from which place he excludes *A. gambeli*, so that this must now be accepted as one of its breeding-places.

It is also found right through the Palearctic Region from Iceland to Siberia, and in the winter from the Mediterranean shores, Egypt, away west through Asia Minor, Persia, and Northern India. Within our limits, comparing it with the way in which the Grey Lag and the Bar-headed Goose occurs, the White-fronted Goose is a rarity, but a few do come every year to Sind and parts of the Punjab. The Indian specimens in the British Museum come from Lucknow, and the river Jhelum below Shahpur.

Hume says that during the thirty years he has shot in India, prior to writing 'Game-Birds,' he only once shot this goose; whether he shot others afterwards I do not know. He records in 'Stray Feathers,' i, p. 259, shooting three geese in Sind, only he then called them *Anser erythropus*, but gave their dimensions as those of small *A. albifrons*, viz., with wings from 15 to 15·75 inches. It is probable, in fact almost certain, however, that many occur which are not distinguished by sportsmen from other geese, and are thus never recorded.

Lieut. C. D. Lester records shooting three White-fronted Geese on the 14th February, 1890, at a place called Deviria near Anjar in Cutch.

Hume, writing of these birds in 'Stray Feathers,' says he twice saw them, once on the Jhelum and once on the Indus; on the first occasion

there were three birds, and on the second only two, and they were quite by themselves, not associating with other geese as one would have expected to see.

Col. Graham says that this goose is found in Assam. Oates had the photo of one sent him which had been shot on the Chindwin River, by Captain Williams, on the 27th November, 1896, and was also informed by Major Rippon that it had been shot on the lake at Fort Stedman in the Southern Shan States.

It is not a rare bird in Great Britain, but has only twice been recorded from Heligoland in the last century.

Mr. Pearson ('Ibis,' 1896, p. 221) shot an *Anser albifrons* on July 24th in Novaya Zembya, and reports that the birds were moulting, so, presumably, they were also breeding there; and according to Alphéraky "they had bred here in large numbers" and "in limited numbers in Finmark." The former author and his brother obtained this goose in the Philippine Islands.

Mr. L. Popham found it breeding on the Yenisei River, but says that it was not half so common as the Bean-Goose. He obtained three eggs and also a gosling in down, but gives no details of how he obtained them.

According to Middendorff, who took the nest and eggs of this species in the Taimyr Peninsula on the 10th July, the former was placed in a cone-shaped tussock of grass, plentifully furnished with down from the parent's breast. Again, on August 2nd he obtained eggs, so that it would appear that they are late breeders.

Prior to the recent records by Oates, nothing was known of this goose being obtained anywhere to the east of the Indian Empire, though there seems to be no reason why it should not fairly often enter both Assam and Northern Burmah. Probably, however, it remains for the Western sportsmen to say whether it is comparatively common or not, and it is to be hoped that sportsmen will go in more regularly for making notes of the varieties they shoot and recording them for the benefit of others.

Alphéraky, who does not separate *A. gambeli* and *A. albifrons*, describes the eggs of the former as being between 3.48×2.22 and 2.99×1.94 inches. A clutch is usually stated as 5, 6, or 7, but there is no doubt that the number is sometimes greater.

The only eggs I have in my collection were laid in captivity, and do not differ from the eggs of the Grey Lag, except in being smaller, and, in each case, a decidedly longer, narrower oval.

(12) ANSER ERYTHROPUS.

THE DWARF GOOSE.

Anser minutus, *Hume, Str. Feath.* viii, p. 114; *Hume, Cat.* no. 948.

Anser erythropus, *Jerdon, B. I.* iii, p. 781; *Hume & Mar. Game-B.* iii, p. 78, pl. 77; *Salvadori, Cat. B. M.* xxvii, p. 97; *Blanford, Fauna B. I.* iv, p. 418; *Stuart Baker, Jour. B. N. H. S.* xv, p. 524; *Oates, Game-B.* ii, p. 53.

Anser finmarchicus, *Alphéraky, Geese*, p. 59.

Adult male.—Differs from the last bird, *Anser albifrons*, in being a good deal smaller, and having the white on the forehead far broader, reaching a line drawn across the head between the eyes; also in having a decidedly darker rump and generally darker tint to the plumage, especially on the head and neck.

"Total length about 21 inches, wing 15, tail 4·5, culmen 1·27, tarsus 2·4" (*Salvadori*). "Length 19·5 to 21 inches, wing 13 to 14·1, tail 2·85 to 3·25, tarsus 2·3 to 2·4" (*Hume*).

The female is yet smaller than the male; wing about 13·3 inches (*Salvadori*).

"The colour of the bill is in the young, before the first autumn moult, a reddish-grey, the nail blackish; later this latter becomes a greyish-white, and the bill pale orange-yellow; in old birds the bill is lively reddish-yellow or orange, the nail yellowish-reddish-white. There is never any trace of black upon the bill.

"The naked edges of the eyelids are dirty yellow in the young, orange in the old; the irides are dark brown. The feet are in the young a pale dirty yellow tending towards orange; in the old a lively orange-yellow or almost orange-red. The claws are pale brown colour, darker brown towards the tips." (*Naumann*.)

In the bird sent to me by Mr. Johnston, and recorded later on in this article, the feet were bright chrome-yellow, and the bill livid green with the nail paler. These colours were recorded after the bird had been dead about 8 hours. Mr. Finn records from three live birds before him, that of the soft parts "the bill is of a beautiful rose-pink, not orange . . . the eyelids are lemon-yellow. In its dark eyes and orange feet, &c." All three of these birds had the soft parts similarly coloured. According to Alphéraky: "In the Lesser White-fronted Goose the yellow colouring and slightly swollen state of the cerema are extremely characteristic. These swollen eyelids appearing so early (in the first plumage) are of a lemon-yellow colour, forming a complete ring round the eye, which, as we have already seen, is never the case with the White-fronted Goose."

Young.—Are less marked with black on the lower parts, often not at all, and the white on the forehead is absent. This seems to appear first in the spring of the first year, and increases gradually with age, probably not reaching its full width until about the third year.

This little goose is found over the greater part of Northern Europe, to the west as far as Great Britain (but only on rare occasions), in Lapland eastwards, Siberia, and Northern China. In the cold weather it is found in Western Europe, Turkey, Asia Minor, North Egypt, Persia, Afghanistan, Northern India, China, and Japan.

In India it has been but rarely recorded, and I can find few notes of its occurrence since the publication of 'Game-Birds.' Blanford, in 'Eastern Persia,' ii, p. 303, records *Anser erythropus* from Persia, and in a footnote he says :—

“One goose at least is very common in Persia. Many couple remain to breed in the reeds round the lake Dashtiarjan and the marshes near Shiraz, whence goslings are often brought into the town. I have never seen them in mature plumage, nor been able to shoot an old bird, so cannot say to what species they belong.”

I was told by a correspondent in Cashmere that he had shot four geese there in 1901 which were of this species. Mr. H. E. James, in the lecture, part of which was given in No. 2, vol. viii, Bombay N. H. S. Journal, says : “A friend, of Sukkur, last year shot the very rare *Anser erythropus*, the White-fronted Goose, and ate it.” I conclude that *Anser erythropus* is correctly given, and that it is only the trivial name which is not the one by which we generally know the Dwarf Goose.

I am afraid a very large number of birds which should be skinned and preserved are plucked and eaten. Only two years ago a friend of mine, who knew how very keen I was on ornithology, informed me with great glee that he had been having a feed on some “Hill Ptarmigan.” He described a bird of that family most minutely, and I thought he must have got hold of something really good, and offered fabulous prices to any Naga who would produce some of these birds for my inspection. Of course they never came, but eventually my friend, seeing me handling some Imperial Pigeons, suddenly exclaimed : “Why, there are the Hill Ptarmigan!” I regret to say that his description, as given me, contained only two points which referred to the pigeon, *i. e.* their colour and their feathered toes, the rest was the result of a fertile imagination, a desire to please, and the knowledge, he being a good sportsman, of what a Hill Ptarmigan *should* look like.

The same man ate with relish some fine specimens of the Naga Hills Partridge (*Arboricola rufogularis*), and left me the wings and a few feathers to weep over. However, partridges and ptarmigan are not geese, and I must stray no further.

The other recorded Indian specimens are : two shot and one other seen by Captain Irby in Oudh ; others seen. Hume does not say how many were obtained by Mr. A. Anderson near Hurdui in Oudh, and at Futtepur in the N.W. Provinces. One procured by Dr. Bonavia near Lucknow ; and finally three shot by Mr. Chill some 30 miles south of Delhi. Three obtained by Mr. Frank Finn (a male and two females) from a bird-dealer in the provision bazaar in Calcutta, and said to have come from somewhere near Rawal-Pindi. Finally, one shot by Mr. R. Johnston, at Sookerating, Lakhimpur, Assam, in October 1903.

It breeds in Lapland, and (*vide* Alphéraky) "it breeds in the Kaninsk Peninsula, and probably throughout the whole tundra of the northern coast line of Siberia." Its breeding-grounds in Lapland are close to the perpetual ice, yet, in spite of this, it is a comparatively early breeder, as Middendorff took the young in down as early as the 23rd June, and on the 29th July a young bird in which the quill-feathers had started growing.

It lays 5 to 8 eggs, in the usual form of nest, which are said to be a dull creamy-white in colour, of a broad regular oval shape, glossless texture, and to measure about 2·9 by 2 inches. Eggs in my own possession are dull grey, one with the creamy tint very slightly developed. They are very long ovals, measuring 2·85 by 1·84 inches, and are perhaps rather abnormal in shape.

The eggs in the British Museum vary between 3·27 and 2·70 inches in length and between 1·93 and 1·80 in breadth.

(13) ANSER BRACHYRHYNCHUS.

THE PINK-FOOTED GOOSE.

Anser brachyrhynchus, *Hume, Str. Feath.* viii, p. 114; *Hume, Cat.* no. 946; *Hume & Mur. Game-B.* iii, p. 71; *McLeod, Str. Feath.* x, p. 168; *Salvadori, Cat. B. M.* xxvii, p. 103; *Blanford, Fauna B. I.* iv, p. 418; *Oates, Game-B.* ii, p. 65.

Melanonyx brachyrhynchus, *Alphéraky, Geese*, p. 87.

Adult male.—"Whole head and neck brown with chocolate or coffee tinge, and often with a small number of white plumules at the base of the bill. Upper part of the back, between scapulæ, brown with rufous tinge. Lower part of back and scapulars light brown, the feathers becoming towards tips rufous and edged with light rufous or light grey. Rump slate-brown; upper and lower tail-coverts pure white. Tail blackish brown, with white edgings and tips to the feathers. Upper wing-coverts slaty ashen-grey, and edged (more or less widely) with light rufous. Tips of median and greater wing-coverts very pale grey-rufous. Outer primaries grey, with black tips; inner primaries and secondaries uniformly brown-black, latter with narrow whitish margins; tertiaries dark brown with wider whitish edgings. Whole breast rufous-brown, with pale edgings to feathers, producing a barred wavy effect. Flanks rufous-brown, each feather at tip passing gradually into rufous, and fringed with lighter, sometimes greyish, margins.

"Remaining part of under surface of body dingy white, upper part of belly with darker grey transverse striping." (*Alphéraky*.)

Legs and feet deep rosy-red, claws black; irides brown. Bill a beautiful carmine-pink, nail black; the base of the bill is also black to a greater or less extent; in young birds the pink exists only as a narrow band behind the nail, in old birds it extends back to the nostrils, along the culmen only as far as the upper edge of the nares, and on the lower edge, sometimes, as far back as the extreme base of the bill.

The measurements of a very fine male in my possession were:—Length 27 inches, wing 16·8, tarsus 2·44, tail 4·8, bill at point 1·6, and from gape 1·65.

"Wing 15·7 inches, culmen 1·73 to 1·88, depth of bill at base 0·22, tarsus 2·20. Weight $6\frac{1}{2}$ to $7\frac{1}{4}$ lbs." (*Alphéraky*.)

Salvadori (*loc. cit.*) says regarding the distribution of this goose: "Spitzbergen, where it nests, and probably also Franz Joseph Land; during the migration and in winter in N.W. Europe; occasionally it strays to Germany, Belgium, and France; its alleged occurrence in

India requires further evidence." In spite of Salvadori's doubt on the subject, this beautiful goose has now been ascertained beyond question to visit India. As long ago as 1849 Blyth recorded it from the Punjab and gave it in the 'Cat. of Birds Asiatic Museum.' Thirty years then elapsed before there is any notice of this goose in Indian publications, and then Hume again noted its occurrence (in 'Stray Feathers,' viii.). In 1864 he had, however, shot two birds of this species in the **Jamna**, and Colonel Irby also had recorded having seen a specimen killed near Lucknow in January 1858. Colonel Graham assured Mr. Hume that the species is not uncommon in Assam on the Brahmapootra.

Again, Major-General McLeod says of this goose: "I shot one of these out of a flock of about twenty on the Kunawan bheel, near Gurdaspur, Punjab, in 1853." All these records *may*, however, have referred to other species of Bean-Geese, most probably to *neglectus*, a goose far more likely to favour us with visits than is *brachyrhynchus*, whose range does not, *normally*, extend nearly as far as India.

The goose in my collection, above referred to, was shot by one of my collectors on a large bheel in the south of Cachar. He said that it was one of a flock of about a dozen, and that they were extremely wary and wild. He went after them several times without obtaining a shot, and at last got it by a fluke. He was stalking some other ducks when these geese, which had been put up by someone else, flew close over his head, and a lucky shot aimed at the front bird knocked over one of the last ones.

This is the bird referred to by Oates in his article on the Bean-Geese which appeared in the Bombay N. H. S.'s Journal, and which he also mentions in his manual of 'Game-Birds.' Since these were written, I have, in consequence, hunted up, and luckily found, my original notes on the goose, which leave absolutely no doubt as to my identification having been correct, the notes on the wing-coloration and the bill having been very full.

As regards its breeding-habits, there seems to be little on record beyond Dresser's notes; he says:—"Of its breeding-habits but little, comparatively speaking, is known, and it is only known to breed with certainty in Iceland and Spitzbergen. Professor Malmgren, who obtained its eggs in the latter island, says that it is exceedingly wary and shy. In the early summer it is to be seen in small flocks on moss-covered low lands near the sea, or on rocky precipices, where there is vegetation here and

there; but in the breeding-season it is seen in pairs. When moulting, it frequents freshwater swamps, and later on, when collected in flocks, it is to be met with near the coast.

"Its nest is placed in prominent situations on high rocks, or platforms on steep cliffs, often close to a river, or in some grass-covered place, and sometimes on high cliffs close to the sea on the inner fiords. The nest is so situated that the birds can have an uninterrupted view from it of the country round, and can readily see if an intruder approaches or danger threatens. Hence it is difficult to shoot this shy bird, even at its nest, for the gander is extremely watchful, and directly anyone approaches warns his mate by uttering a clear whistling cry. In June the female lays four or five eggs, which are hatched about the 10th or 15th July, and both parents assist in taking care of the young. I possess a single egg of this goose, obtained on the Swedish expedition to Spitzbergen, which is pure white, resembles the egg of *Anser cinereus*, but is rather smaller, and the grain of the shell is somewhat smoother."

Morris, 'Nests and Eggs of British Birds,' says:—"These birds unite about the middle of May; Mr. G. Macgillivray has remarked that he saw them in pairs about the middle of the month, and that they had the young fully fledged and strong upon the wing about the end of July. They had again collected into flocks by the beginning of August. The eggs are of a pure white colour. Eight were laid by one of these geese kept in the water in St. James' Park by the Ornithological Society of London."

I have received several clutches of this fine goose's eggs from Iceland, two of five each and two of four each, and from Spitzbergen I have received a single egg. They are in no way different to the eggs of the Grey Lag Goose, but average considerably smaller, the 19 being, on an average, only 3.0 by 1.98, and the largest only 3.15 \times 2.06 inches.

Seebohm, 'Birds of the Japanese Empire,' pp. 236-237, says:—"The Pink-footed Goose was admitted to the Japanese fauna on the authority of a female obtained in October at Hakodadi by Captain Blakiston (Swinhoe, 'Ibis,' 1875, p. 456). Unfortunately this example cannot be found, and some doubt attaches to the correctness of the identification." He goes on to say: "It is possible that this may be an example of a Pink-footed Goose, but in the absence of the black base to the bill I am inclined to regard it as the young in first plumage of the White-fronted Goose."

I may note that the bill of the specimen in my collection, and which has had very rough usage from neglect, rats, and, finally, earthquakes and heavy rain, has the bill now of a uniform dirty grey-white, the whole of the outer portions having been pounded off by the heavy stones of a wall falling on it during the earthquake of 1897. It would seem, therefore, that very little reliance can be placed on the colouring of the bill in old specimens as a means to identification.

(14) ANSER NEGLECTUS.

SUSHKIN'S GOOSE.

Anser neglectus, Oates, *Game-B.* ii, p. 75; *id.* *Jour. B. N. H. S.* xvii, p. 44; Stuart Baker, *ibid.* p. 537; Alphéraky, *ibid.* p. 599; Buturlin, *ibid.* p. 604; Oates, *ibid.* p. 900.

Melanonyx neglectus, Alphéraky, *Geese*, p. 78.

Description.—"The species is distinguished from *A. brachyrhynchus* by greater size, larger and more robust bill, and by the fact that the secondary coverts are black-brown, and thus of another colour to the main coverts. From *A. segetum* it is distinguished by the dark flesh-colour of the legs and median part of the bill.

"As concerns the colour-differences of the plumage of the new goose from *A. segetum*, the colouring of the head and neck is darker than in the latter, and the margins of the feathers of the upper side and of the dark feathers of the sides of the body are browner. In some specimens, just as in *A. segetum*, is observable a slight admixture of white feathers at the very root of the upper mandible." (*Sushkin*.)

To this description Alphéraky adds:—"The bill of Sushkin's Goose is comparatively weak and narrow; from the bill of *M. segetum* it is distinguished by its far less depth at the base, and in particular by the feebler lower mandible. . . . A still more marked difference is presented by the shape and comparative size of the nail on the upper mandible." The last sentence refers to the difference as shown in my key. The differences between *neglectus* and *segetum* are the same, emphasized, between *neglectus* and *serrirostris*.

Total length about 30 inches, wing 17·7 to 19, culmen 2·16 to 2·48, tarsus 2·95 to 3·11.

Bill: nail black, base of bill black as far as the exterior edge of the nostrils, but with the edge uneven and receding slightly in the centre; band of bill a lovely carmine-pink; feet vivid, fleshy-red. (Notes by Mr. Mundy.)

Bill with black nail and base and bright pink centre; feet same as the light portion of the bill. (Notes by Dr. Moore.)

Young in first plumage.—"These differ from the adults first of all by the narrower feathers of the body, as is generally the case with all young geese compared with old. Tips of the feathers on neck light whitish-grey. Underparts light dingy grey, with tinge of ochreous and darker rounded grey centres to feathers; vent and tail-coverts (upper and lower) dingy-white, perhaps due to dustiness of skin. Head and neck brown, with strong coffee tint." (*Alphéraky*.)

The actual distribution of this goose has not yet been definitely settled: it *probably* occurs in Great Britain; it *certainly* occurs in Hungary, Russia,

and much of Central Europe, Asia Minor, and extreme west of Asia through to Persia. Seebohm obtained it on the Yenesei, and the three birds obtained by Dr. Moore and my men in Dibrugarh must have been of this species.

In vol. xvii. of the 'Bombay Journal,' when writing of this species (p. 537), I most unfortunately twice wrote *middendorffi*, instead of *neglectus*, the former of these two, of course, not being a pink-billed species. In consequence of the discussion on Bean-Geese which arose in the Journal, I hunted up my old notes on this subject, and was lucky enough to find letters from Messrs. Moore and Mundy and also my own notes. These, I think, quite definitely fix the identification of the geese obtained.

Sushkin's Goose breeds in Novaya Zemlya, and almost certainly in Kolguev, perhaps also in the Surgai district near Urkach.

(15) ANSER MIDDENDORFFI.

MIDDENDORFF'S GOOSE.

Anser middendorffi, Oates, *Jour. B. N. H. S.* xvii, p. 45; *Alphéraky*, *ibid.* p. 599; Buturlin, *ibid.* p. 604; *id.* *Field*, Nov. 17th, 1906; Oates, *Game-B.* ii, p. 76.

Anser serrirostris middendorffi, Salvadori, *Cat. B. M.* xxvii, p. 102.

Melanonyx arvensis sibiricus, *Alphéraky*, *Geese*, p. 104.

Description. **Adult male.**—"Head and neck grey-brown, for the most part with a strong rufous, coffee, or grey-bay tint. A male from Amurland has even a golden-buff colour on the head and neck, and apparently such examples are far from being of rare occurrence locally in East Siberia, as indicated by the name, 'Yellow-headed Goose,' met with among native appellations in Transbaikalia. All these various tints are evidently of accidental origin, and are just as often present in different individuals as absent. They are doubtless caused by the same factors as the rusty or yellow tinges on the heads of swans, ducks, and other species of geese.

"In the rest of the plumage, except for a more uniform dark brown colouring on the upper surface of the body, the eastern form does not differ from the type. Even in dimensions, with the exception, of course, of the bill and feet, *M. arvensis sibiricus* almost agrees with large examples of *M. arvensis*." (*Alphéraky*.)

Bill black, with a ring of yellow-orange round the apical portion of both mandibles behind the nail. In most cases this is quite narrow, though it may be found to extend as far back as the anterior edge of the nostril in a few specimens, but never, as in *arvensis*, back to the edge of the forehead.

Alphéraky gives the length of the culmen as never being less than 2.91 inches in adults, and extending to as much as 3.26; and Buturlin gives the smallest measurement he has found in this bird as 2.87, and in the same place says that he has found specimens of *arvensis* with culmen exceeding 2.75.

Middendorff's Goose is the Eastern form of *arvensis*, the Yellow-billed Bean-Goose, and only differs from that bird, except as noted above, in having a larger bill and in having less yellow on it.

As regards its distribution, Alphéraky gives it as follows:—"Everywhere in East Siberia, from the Taimyr Peninsula eastwards to Kamchatka, Chukchiland, and the Komandor Islands. . . . It nests on the Boganida, on the lower reaches of the Yana, on the Vilyui in the Yakut

Government, and almost everywhere throughout Siberia between Lake Baikal and the Sea of Japan, near great rivers and lakes southwards to 50° N. lat. and possibly still farther south.

“It migrates to pass the winter in China and Japan, but how far it descends southwards for this purpose we have no idea.”

As regards its breeding, he writes: “This goose breeds alike in the lowlands and on the hills”; and quotes Maak to the effect: “It builds its nest near the Vilyui and its tributaries, on lakes far removed from habitations, and young in down were found as early as June 8th.”

The eggs are described as being almost white or yellowish, but as soon becoming much soiled with incubation. In length they vary between 2·89 and 3·68 inches, and in breadth between 2·09 and 2·44; the smallest measurements are probably abnormal, the next smallest measuring 3·07 × 2·11.

(16) ANSER INDICUS.

THE BAR-HEADED GOOSE.

Anser indicus, *Jerdon, B. I.* iii, p. 782; *Hume, Nests & Eggs*, p. 636; *Butler, Str. Feath.* iv, pp. 27, 40, & 99; *id. ibid.* vi, p. 260; *Adams, ibid.* p. 401; *Hume, ibid.* vii, p. 491; *Hume & Mar. Game-B.* iii, p. 81; *Hume, Nests & Eggs (Oates ed.)*, iii, p. 279; *Oates, Game-B.* ii, p. 57; *Salvadori, Cat. B. M.* xxvii, p. 105.

Eulabeia indicus, *Ball, Str. Feath.* iii, p. 436.

Eulabeia indica, *Alphéraky, Geese*, p. 133.

Adult.—"Head white, with two horse-shoe blackish bars on the occiput and nape; hind-neck brown-black; a longitudinal white band on the sides of the neck; upper plumage very pale ashy, the feathers edged with whitish and tinged with brown on the mantle and scapulars; sides of the rump and upper tail-coverts whitish; throat white, fore-neck brownish ashy, passing gradually into cinereous on the breast, whitish on the abdomen; vent and under tail-coverts white; feathers of the flanks brown, rufous towards the tips with pale edgings; quills grey, dusky towards the tips, and gradually becoming darker towards the secondaries; tertials brownish-grey; tail grey, white-tipped.

"Total length 27 inches, wing 17, tail 6, bill 2, tarsus 2·75." (*Salvadori.*)

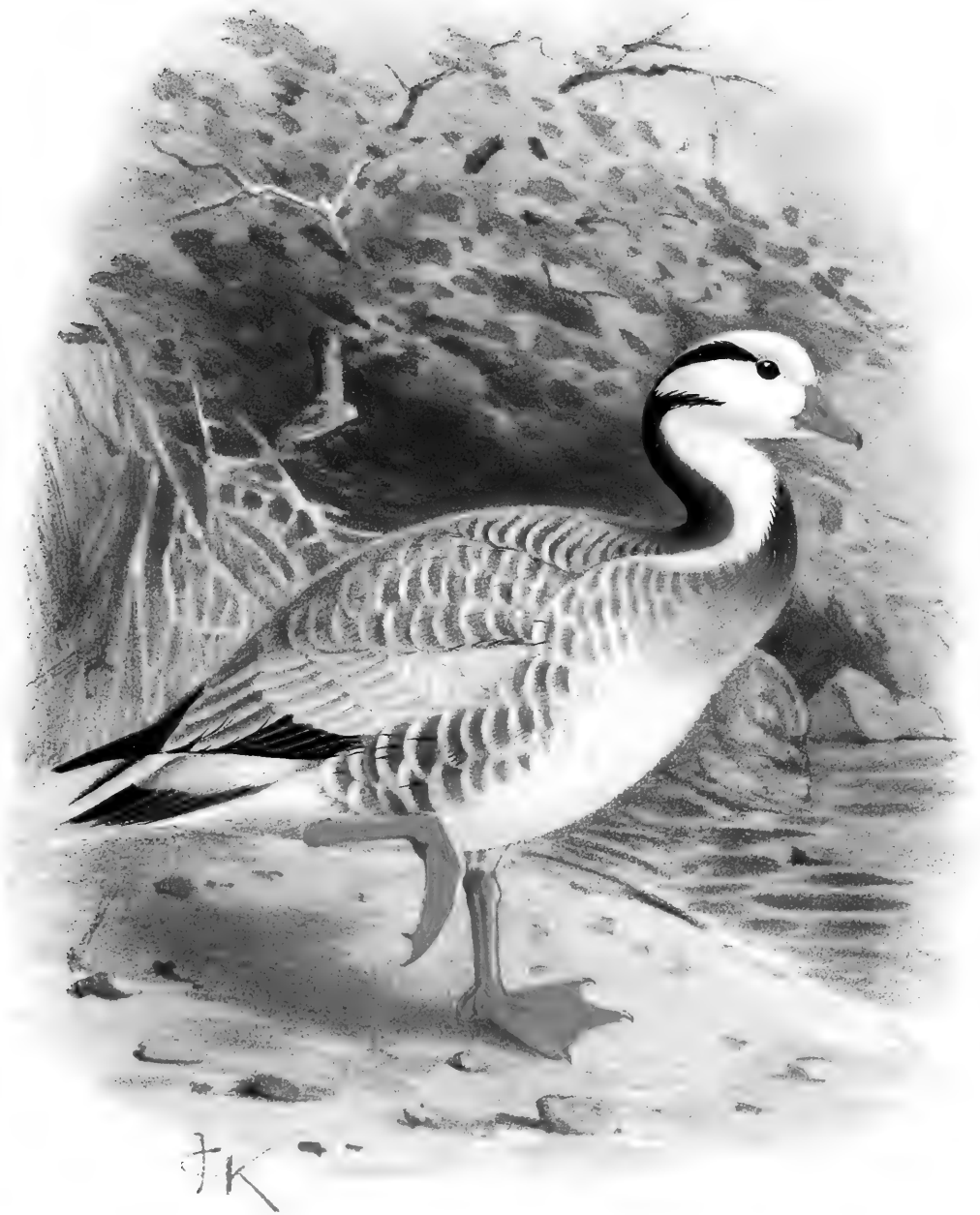
"Length 27·25 to 33·5 inches, expanse 50 to 60, wing 16·0 to 19·0, tail from vent 5·0 to 7·0, tarsus 2·5 to 3·3, bill from gape 1·8 to 2·3. Weight 4 lbs. to 6 lbs. 14 ozs." (*Hume.*)

"The legs and feet are light orange, sometimes paler, occasionally only yellow; claws horny black; the irides deep brown; the bill orange-yellow to orange, rarely only pale lemon-yellow, often paler or greenish towards the nostril; the nail black or blackish." (*Hume.*)

Young.—"Forehead brownish-white, a little tinged with rusty; a dusky line through the lores to the eye; whole crown, occiput, and nape sooty or dusky black; no trace of either the two distinct black head-bars or the conspicuous white neck-streaks; back of neck wood-brown, sides and front of the lower part of the neck pale dusky greyish, mottled with whitish; most of the feathers of the breast and abdomen have a pale rusty tinge towards the tips; the conspicuous dark banding of the flanks of the adults is almost entirely wanting; tail somewhat browner than in the adult." (*Salvadori.*)

Young in down.—"Pale yellowish, top of the head and upper parts pale brown." (*Salvadori.*)

Roughly speaking, the habitat of this goose is India and Northern



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THE BAR-HEADED GOOSE.
Anser indicus.

J. Green, Chromo.



Burmah and the Shan States during winter, and in summer Central Asia, due north of these countries up to latitude 55° N.

The most southern record which I can find is that by Jerdon in his 'Birds of India.' He writes:—"I once saw a couple of these geese in the extreme south of India in August, in a small sequestered tank. This pair may have been breeding there, but perhaps they were wounded or sickly birds." It is quite possible that they were breeding, but it is almost certain that one at least of the pair must have been damaged in some way, sufficient to incapacitate it from migrating. They are very devoted to one another, and probably if either of a pair of geese was injured the other would remain with it. On the other hand, they might both have been geese, or both ganders, in which case also, of course, both must have been injured. In Southern India it is nowhere a common bird. Major McInroy reported it as common in the Chitaldroog District of Mysore, and Mr. Theobald as not common in Coimbatore. In the south of the Central Provinces it is still far from plentiful. In Bengal it is met with in considerable numbers on all the larger rivers quite down to their mouths. I have seen great flocks of them, both in Jessore and Khulna, in January. It is also found on the rivers running through Behar, Chota-Nagpur, &c., but is not common. In Assam it is comparatively rare, but has been met with in Sylhet, Cachar, and Manipur, and I have also seen it in Kamrup, and it extends all up the Brahmapootra. It is to the west of Bengal, however, that it is found in such vast numbers, and in most parts there outnumbers all the other geese by more than five to one. In Sind, however, the Grey Lag is the more common, and it has not been obtained in Gujarat.

Speaking broadly, this goose is far more of a river than a lake or tank bird, though it is, of course, also found on the larger lakes and bheels. In Jessore and Khulna we only saw one flock on the Moolna bheel, and that not a large one, but on the rivers we saw several big flocks. Here I tried Hume's plan of floating down on them in boats, but a good many circumstances combined to prevent my having any success. In the first place, the water was almost everywhere too deep to enable a man to wade and push behind the boats; then, also, the fear of "muggers" was much too strongly felt by the men for them to remain in the water long enough to get near the birds; and, finally, these last were exceedingly wide awake, and would not allow us to get within distance of anything but the longest shots. I did get one pair, eventually, but it was only by an adaptation of Hume's plan. The geese, of which there was a flock of about forty, were

on a sand chur, about fifty yards from the bank of the river, which was about 200 yards wide. I dropped down the river along the bank furthest from the geese, and then, when below them, worked across the river and got out the same side as the geese. Hiding at once in the rank grass on the bank, I sent the boat back to within a couple of hundred yards of the geese, and when I saw that their attention was fully taken up with it, managed to stalk to the edge of the water nearest where they were. Armed with wire cartridges (No. 2 shot), I thought I could do some execution on the flock as they sat on the bank, but after I fired at them only two remained as the rest flew off. The flock, however, seemed to consider that the boat was the aggressor, and sweeping round flew within twenty yards of me, and I knocked over three with my second barrel. Of these three, one was snapped up as soon as it touched the water by a crocodile, and the same fate happened to the second before we got to it, whilst the third flew away again without offering another chance.

In the daytime, according to Hume, Tickell, and nearly all other observers, as well as my own observations, geese, of all kinds nearly, rest during the day on land near the edge of the water; they seem to prefer bare sandy churs, especially when these are surrounded by water, but failing such they rest on the banks. A few birds always seem to be posted as sentries, and they keep a wonderfully keen look-out and are very hard to approach within reasonable distance. Mr. Theobald says that in Coimbatore, during the daytime, "they keep floating idly in the centre of some tank or river."

In Bengal, at all events, where the rivers are deep and "muggers" plentiful, I fancy that fighting at night offers the best chances of a bag. Where they are to be found in weedy lagoons, they can, of course, often be approached by dug-outs, with a small screen in the front of the boat composed of green branches or reeds, but when the water is open, and there is no natural cover, the birds are much too wily to be imposed on by the screen. Of course, if one goes in for shooting them as they fly overhead to and from their feeding-grounds, one cannot expect to obtain large bags, except with unusual luck. Mr. Reid, in 'Game-Birds,' narrates how he has got as many as thirty birds between sunset and 7.30 P.M., but, as a rule, less than half of this would be considered a good bag. Of course, the charm of variety is added to the enjoyment of the shoot, for in fighting almost any kind of duck may turn up and join the game-bag.

Hume's appeal to Indian sportsmen to try Prjevalski's plan of lying

on the ground, and waving his hat at the geese in order to induce them to approach, seems to have met with no response; at all events, I can find no bags, heavy or otherwise, recorded as having been made thus.

They are, of course, almost entirely vegetable feeders, and it is wonderful what damage a flock can do to young crops even in a single night; and where they are numerous, as they are in Upper India, and visit the same feeding-ground night after night, they take no small percentage of the wretched villagers' winter crops. They will eat almost any young, tender, green stuff, but probably prefer the late rice-crops to any other. They feed, as a rule, during the night-time, but, where they are not interfered with, commence to graze about 4 P.M. and continue on the grounds until an hour or so after sunrise.

Their flight is typically goose-like and in the usual **V**-formation. Mr. Damant notes a very peculiar action of these birds:—"They then appear flying in the form of a wedge, each bird keeping his place with perfect regularity. When they reach the lake they circle round once or twice, and finally, before settling, each bird tumbles over in the air two or three times, precisely like a tumbler pigeon; after they have once settled, they preserve no regular formation."

As a matter of fact, each bird does not, as a rule, if ever, keep in its exact place in the **V**, but all observers have noticed that geese and other birds which adopt a **V**-shaped or line formation in flying constantly alter their position, each leader retiring after a few minutes to the rear, and the second bird taking its place, and then giving it up again in a short time to the bird immediately behind. This has been much remarked on in observations on migrating birds passing Heligoland.

I have never seen any geese of this species tame, but Hume says he has seen many, though they do not ever appear to assume the confidential lap-dog familiarity of the Grey Lag. Their call is rather harsher and more shrill than is that of the Grey Lag and very easily distinguishable from it.

They arrive in India in the end of October, but in Bengal and Southern India few put in an appearance before the end of November. In the same way they leave these parts earlier than they do elsewhere, and there is little chance of any being found after the end of February. Their headquarters for breeding seems to be the numerous lakes in Ladakh, and they also breed throughout Thibet in suitable localities, and probably also north of the Himalayas in many other parts. There has been nothing recorded, so far as I can ascertain, since 'Game-Birds' was written, concerning the breeding of this goose.

Drew, writing of one of the many islands in the Tsomourari Lake in Ladakh, says :—

“The island is about half a mile from the shore, near midway in the length of the western side—it may be 100 yds. corner to corner in one direction, and 60 yds. in another ; it is of gneiss rock, rising only nine or ten feet above the water ; the soundings before given show that there is about 100 ft. of water between the island and the near shore. This little place, being ordinarily undisturbed by man, is a great resort of the gull, which in Ladakhi is called Chagharatse ; the surface was nearly all covered with its droppings, and there were hundreds of the young about ; most of these must have been hatched near the beginning of July. Having heard that it was a matter of interest with some ornithologists to learn about the nidification of the wild (barred-headed) goose, I was on the look out for information concerning it, and I found that this island is one of the places where it lays its eggs. I was told by the Chámpás that they find the eggs there just before the ice breaks up—say, the beginning of May ; after that they have no means of reaching the island. I myself found there a broken egg, but at the time I was on the island (the last week in July) the young had all been hatched. A few days later, I followed the same enquiry in the valley of the Salt Lake, and on an earthy island in the fresh-water lake called Panbuk I found a nest where the mother was sitting with some goslings and two eggs, one just breaking with the chick ; the other egg I measured, and found to be $3\frac{1}{4} \times 2\frac{1}{4}$ inches and very nearly elliptical in form. The nest was a slight hollow, lined with, first, a few bits of soft herb, then with feathers. I was told that these goose eggs are found also at the edge of the Salt Lake itself.”

Capt. Stein, I.M.S., took a considerable number of the eggs of this species in the Chumba Valley, some of which have come into my possession or passed through my hands. These are just like the eggs of *Anser ferus*, but average smaller, and the measurements of the 14 I have seen were only 3.07×2.23 inches. The colour was pure white, were unsoiled, and the texture exactly like that of the eggs of *A. ferus*. Four or five appears to be the normal full number in a clutch.

(17) RUFIBRENTA RUFICOLLIS.

THE RED-BREASTED GOOSE.

Branta ruficollis, *Bengal Sporting Mag.* 1836, vii, p. 247 ; *Blyth, Ibis*, 1870, p. 176 ; *Oates, Game-B.* ii, p. 78 ; *Salvadori, Cat. B. M.* xxvii, p. 124 ; *Stuart Baker, Jour. B. N. H. S.* xvi.

Rufibrenta ruficollis, *Alphéraky, Geese*, p. 140.

Description. **Adult male.**—"Entire crown and hind-neck black ; the black of the crown extends through the eye to the chin and throat, leaving a large round white patch between the eye and the bill ; on the ear-coverts a chestnut angular patch, surrounded with white, ending in a white band down the sides of the neck ; neck and upper breast rich chestnut, surrounded below by a white narrow band ; back, rump, lower breast, and upper abdomen black ; upper tail-coverts, lower abdomen, and under tail-coverts white ; flanks white, with black bands at the tip of the feathers ; wings brown-black, the upper coverts with pale edgings, which on the middle and greater wing-coverts form two greyish bands ; tail black : 'bill almost black ; irides hazel ; legs and feet dark brown, almost black' (*Saunders*)." (*Salvadori*.)

The female only differs from the male in being somewhat smaller, the colours are equally bright.

Young birds in second year.—"Shiny black of plumage replaced by brown ; instead of a rufous patch in the aural region, a similar grey-brown one, with more or less admixture of rufous plumules, the whole patch being of indefinite outline, mingling with the surrounding whitish (not white) streak. As regards the rufous colouring of the anterior part of neck and upper breast, it can only be said that it is a lighter (rufous-buff) than in adult birds. White transverse bar, bordering inferiorly the rufous of upper breast, less definite, and no black margin between this and the rufous, or only in the shape of a few black-brown plumules.

"Tail-feathers with very narrow white or whitish tips. Underside of wings and axillaries grey-brown.

"Feathering on chin with a large admixture of white featherlets, giving it a finely mottled appearance.

"Tips of greater wing-coverts light buff ; consequently both transverse bars across the wing are of this colour and not white." (*Alphéraky*.)

Dimensions.—"Wing 13·7 to 14·1 inches, tail 5·90 to 6·0, culmen 1·6 to 1·1, tarsus 2 to 2·04." (*Aphéraky*.)

The Red-breasted Goose has been found to occur practically throughout Europe, though there is as yet nothing on record as to its appearance in Spain. To the extreme west it is rare, and to the west generally less

common than to the east ; it occurs in Persia and Turkestan, so that its coming into India is by no means surprising.

Its first *probable* appearance in India was recorded in the old 'Oriental Sporting Magazine,' and from that time (1836) until, in the pages of the Bombay Nat. Hist. Society's Journal, I noted Mr. Mundy's having seen it in Dibrugarh, no one had ever come across it again. Mr. Mundy saw the bird on the Bramapootra, and, though he failed to obtain a specimen, he took very careful notes of its coloration, which, on being repeated to me, were ample enough to enable me to identify the bird as the Red-breasted Goose. Finally, in March 1907, I myself was fortunate enough to see five specimens on a chur in the Brahmapootra, just below Gowhatty ; they arose a long way off as the steamer drove upstream towards them, but turned and flew past us within sixty to a hundred yards, and there could have been no possible chance of mistaking them.

Zhitnikov, as quoted by Alphéraky, gives a most interesting account of this beautiful goose. He writes :—"Thick clouds of geese (of both species) got up from the shores of the lake, cackling incessantly, and flew off to the steppe ; and the abandoned lake now contained only shelldrakes and avocets. A belated gaggle of geese had alighted near my place of concealment, but a white-tailed eagle at once dispersed them, giving me no chance of shooting.

"We sat in our pits to no purpose until eight o'clock, and then went to the river, to drink tea, on our way putting up Brahmini Ducks feeding in the steppe grass. Having finished our tea,—a nasty, muddy infusion from the river, but not brackish,—we again took up our posts in the pits, after carefully screening them with grass.

"At ten in the morning the call of the geese resounded from the Atrek ; a series of black streaks showed from beyond the river ; nearer and nearer they flew, and the whole steppe round was filled with clouds of birds. To gain any idea of the vast masses that collect to migrate, one must actually see this host of geese, and hear their cackle, which drowns the human voice. Without any exaggeration, it may be said that there were tens of thousands of birds, some of the flocks containing from at least 300 to 500 birds. Flock after flock arrived on the lake ; the first parties were followed by others, and from beyond the river appeared the ever-approaching squadrons. They flew for the most part in masses, and only small flocks of 10 to 20 geese disposed themselves in transverse lines.

"It may here be added that in winter the kazarkas generally flew to

the water and back in crowds, or more rarely in a transverse drawn-out line, but very seldom in a single line or in a 'key,' that is, in a longitudinal line or wedge, like swans, most geese, and cranes.

"The flocks on arrival circled above the lake, and seeing nothing suspicious, settled, although far from the shore; they flew very high and dropped vertically on to the water. The majority of the flocks consisted of *Anser erythropus*, but there were also many of *A. ruficollis*, slightly distinguished by the deep black of the belly, the bright white streak on the wings, and their squeaky, shriller-toned note compared with the white-fronted species, as well as their notably inferior size. The last flocks, seeing their fellows already sitting on the water, descended much lower as they approached the lake."

Dr. Radde says that their flesh is dry and tough, but this refers to birds on migration; and Lepekhin says that its flesh "is not disagreeable, and is excessively fat." It is said to be easily tamed, and to become as familiar and confiding when in a domestic state as it is wild and cautious when in a state of nature.

It breeds throughout the tundras of Western Siberia, and is also said by Pearson to breed in Lapland ('Ibis,' 1896, p. 210).

Middendorff got its eggs on the Boganida, slightly incubated, on the 25th June, Seebohm took its nest on the Yenesei in late June 1877, and Popham on the same river in 1895. In the latter case the four nests found were taken at the foot of a cliff, also tenanted by a Peregrine Falcon. The eggs are described as creamy white and much like those of the Bean-Goose, but with a very fragile shell, through which the green tint of the lining membrane shows.

The eggs vary from 2·71 to 2·83 inches in length and from 1·73 to 1·77 in breadth, and there were seven, eight, or nine eggs in the full clutch.

Subfamily ANATINÆ.

Key to Genera.

- A. Lower portion of tarsus in front with small reticulate scales *Dendrocygna*, p. 93.
- B. Lower portion of tarsus in front with a row of transverse scutellæ.
- a. Speculum wanting *Marmaronetta*, p. 202.
- b. Speculum always present.
- a'. Outer webs of inner secondaries chestnut.
- a². Coloration pied chestnut, black and white . . . *Tadorna*, p. 109.
- b². Coloration all rufous-chestnut of different shades, except on quills *Casarca*, p. 114.
- b'. Outer webs of inner secondaries not chestnut.
- c². Bill spatulate *Spatula*, p. 196.
- d². Bill not spatulate.
- a³. Upper wing-coverts blue or grey-blue . . . *Querquedula*, p. 188.
- b³. Upper wing-coverts not grey-blue.
- a⁴. Tail long, with the central tail-feathers acuminate and extending well beyond lateral tail-feathers *Dafila*, p. 181.
- b⁴. Central tail-feathers not elongated, and tail moderate in length.
- a⁵. Bill broad, about the length of the head. *Anas*, p. 123.
- b⁵. Bill not very broad and shorter than the head.
- a⁶. Upper and lower tail-coverts extending beyond end of rectrices . . . *Eunetta*, p. 143.
- b⁶. Upper and lower tail-coverts not extending beyond end of rectrices.
- a⁷. Central feathers not acuminate and not extending beyond lateral ones *Chaulelasmus*, p. 148.
- b⁷. Central tail-feathers more or less acuminate and extending slightly beyond lateral ones.
- a⁸. Bill small and about equal in breadth throughout *Mareca*, p. 155.
- b⁸. Bill moderate and tapering towards tip *Nettion*, p. 162.



THE GREATER WHISTLING-TEAL.
Dendrocygna fulva.

d. Green. Chromo.

Genus DENDROCYCNA.

The genus *Dendrocygna*—or *Dendrocygna*, as most of us would probably still prefer to call it—contains our two widely-known species of Whistling-Teal as well as seven others, some of which are found in every continent except Europe.

Whistling-Teal are amongst the few Anatidæ that perch constantly on trees, and also breed on them. The sexes are similar in plumage, though the female is often slightly smaller than the male. Many systematists used to consider that they were more closely allied to the Anserinæ than to the Anatinae, and in many ways they do clearly approach the former—more especially, perhaps, in the formation of the legs and bills.

They are non-migratory ducks, or only migratory in a very local way.

Key to Species.

- a. Upper tail-coverts whitish, sometimes marked with black *D. fulva*.
- b. Upper tail-coverts uniform chestnut *D. javanica*.

(18) DENDROCYCNA FULVA.

THE GREATER WHISTLING-TEAL.

Dendrocygna major, Jerdon, *B. I.* iii, p. 790; *Hume, Nests & Eggs*, p. 640; *id. Str. Feath.* iii, p. 193.

Dendrocygna fulva, *Hume & Davis. Str. Feath.* vi, p. 488; *Hume, ibid.* vii, p. 463, viii, p. 115; *Legge, B. of Cey.* p. 1069; *Hume & Mar. Game-B.* iii, p. 119; *Hume, Cat.* no. 953; *Parker, Str. Feath.* ix, p. 487; *Oates, ibid.* x, p. 245; *id. B. of Brit. Burm.* ii, p. 274; *Barnes, B. of Bom.* p. 399; *Hume, Nests & Eggs (Oates ed.)*, iii, p. 286.

Dendrocygna fulva, *Salvadori, Cat. B. M.* xxvii, p. 149; *Blanford, Fauna B. I.* iv, p. 432.

Description. Adult.—"Head, neck, and lower parts deep reddish-ochraceous, passing into cinnamon on the flanks, where the longer feathers have a broad mesial stripe of pale ochraceous, bordered by dusky; crown ferruginous, nape with a distinct brown-black stripe, commencing at the occiput; middle of the neck whitish, minutely streaked with dusky on the edges of the feathers; prevailing colour above brownish-black, the dorsal and scapular feathers broadly edged with cinnamon colour, giving a barred appearance; lesser wing-coverts chestnut;

upper and under tail-coverts buffy-white; quills and tail dark brown." (*Salvadori*.)

The bill varies from dusky black, black on the terminal third and slaty at the base, to dusky throughout, merely tipped black, and much shaded with bluish-lead colour at base and basal half. In the same way legs and feet vary from quite pale dusky plumbeous, more or less of a blue tint, to almost black. According to Merrill, the legs are bright slaty-blue, but personally I have seen no Indian birds with brightly tinged legs. Claws black; the irides are light to dark brown.

"Length 18 to 20 inches, wing 8·10 to 8·90, tail 2·2, culmen 1·66 to 1·95, tarsus 2·10 to 2·4, middle toe 2·30 to 2·8." (*Salvadori*.)

Jerdon gives the length as 21 inches and wing 9½. The largest I have seen had the wing 9·20 inches, which is practically the same.

The female.—Only differs from the male in being slightly smaller: length 17 to 19 inches, wing 7·85 to 8·25. A female obtained by Capt. Shelley from Nyasaland measured, wing 9·1 inches, tarsus 2·1, and culmen 2·2. This gives a larger bird, with proportionately even larger bill, than any Indian bird which I have seen or of which I can find the measurements. Three other birds have been obtained in Nyasa.

Birds of the first year are duller and paler, the upper tail-coverts are narrowly edged with brown, and the wing-coverts are a dull chestnut-brown.

Young in down.—"Upper parts greyish-brown; lower parts whitish; a white band across the occiput, interrupted by the brown band which runs along the hind-neck; a brown band from the ears to the hind-neck; no white patches on the sides of the back; a whitish band across the wing." (*Salvadori*.)

Hume gives the weight of an adult male as 1 lb. 12 ozs. and that of a female as 1 lb. 10 ozs. I have shot a male which weighed 2 lbs. exactly, and which was a very fine heavy bird. I have never weighed a female or, at least, recorded any weights of such.

The Greater Whistling-Teal has its headquarters within Indian limits in Eastern Bengal, where in parts it is exceedingly numerous; thence it extends into Assam, where, however, it is not common, and seems gradually to become less common towards the west and north of the Empire and to extend a very short way to the south. Mr. C. B. Sherman said that he found it very common in Travancore, but it is most probable that he mistook the Common Whistling-Teal for this bird. Jerdon also found it fairly common in some parts of the Deccan.

As regards Burmah, Oates, in 'Birds of British Burmah,' writes:—"The Larger Whistling-Teal is comparatively a rare bird in Burmah, except in the northern portions of Pegu, where I found it very abundant in the Engmah swamp, twenty-five miles south of Prome. Capt. Wardlaw Ramsay procured it at Tonghoo; and I observed it several

times in the paddy-fields near Kyeikpadein in Southern Pegu during the rains. I can find no record of its occurrence in Tenasserim or Arrakan."

He then goes on to say that it is found in Ceylon, but he does not mention his authority for this statement, and I cannot but think it is a mistake, for I can find no record of its occurrence anywhere in that island. In 'Stray Feathers' (*loc. cit.*) he says that the Larger Whistling-Teal is found all over the Province of Pegu, but is less common than the smaller species.

Outside India its distribution is very remarkable. Salvadori thus describes its habitat:—"America (from Southern border of the United States to Mexico), and then from Venezuela and Peru to the Argentine Republic; Africa south of the Sahara, and Madagascar."

Capt. Shelley reports ('Ibis,' 1894, p. 28) four birds from Lake Shirwa in Nyasaland, mentioning that it is the first instance he knew of in which the birds had been found so far south.

The distribution of this duck is the more remarkable when we consider that it is not a migratory bird, or, at all events, only so in a partial manner, as influenced by the want of water, &c. Thus it is a resident inhabitant of various tracts of country, large in themselves, but very widely separated from one another, yet never, as far as is known, occurs in the intervening parts.

Unlike *D. javanica*, this bird is usually found in rather small flocks; even in Jessore and Khulna, where it is perhaps more abundant than in any other portion of its range, I seldom noticed it in flocks of much over twenty, and never, I think, over forty. Generally there were some dozen or fifteen members to each flock. Of course, in some bheels and lakes where they are especially numerous, several small flocks may be seen feeding together, forming a total of 100 birds or more, but on being disturbed it will be found that, as a rule, they, though rising *en masse*, soon divide again into parties.

They are wilder birds than their smaller cousins, and also stronger and quicker on the wing; indeed, when once well started, they are no mean fliers, and require a straight gun to knock them over. One cannot well describe the difference in the voice of the two Whistling-Teals; but it is recognisable, and I think it consists in the bigger bird having a shriller whistle than the other, though it is not such a noisy bird. I doubt if they perch as much as *D. javanica* does; the latter bird often takes to trees in the daytime without any apparent purpose except to rest, but *D. fulva* does not seem to do this. Of course, both birds, when perching, choose

large boughs and branches, as they have no great grasping power, and could not retain their hold on small ones, especially if there was any wind to sway them about. As Hume remarks, this Whistling-Teal is far more often seen on land than is the smaller species, and he also notes their goose-like gait. Their legs are, as we all know, set forward much as are those of geese, and in consequence they naturally walk freely and well as do those birds. I have noticed them resting during the heat of the day on the spits of grass-covered land which run far out into the larger bheels. One or two observers have said that they are more river and clear water frequenters than are others of the genus, but this I have not myself confirmed. Every large bheel and expanse of water which had cover on it contained more or less of these birds, and many a tiny tank or rush-and-weed-covered backwater held its flock; but I have never yet met with them on the open rivers of the Ganges and Brahmapootra, though I have visited them often, and though these run through their favourite haunts.

These duck, or teal, are practically as omnivorous as is the domesticated duck, and will eat almost anything they can get hold of, preferring perhaps a vegetarian to a meat diet.

I can give no thrilling accounts of shooting these teal, as they are not considered game in Bengal, and when we do shoot them we do not talk of it. Of course a good many are shot for the servants, boatmen, &c., who enjoy them immensely, and the fishier they are the more tasty they consider them. I have noticed no difference in the flavour of the two species of Whistler, and cannot say I think much of either; they do not make bad curry or mulligatawny soup when one can get nothing else, and I have eaten them in preference to the domestic *moorgh*i, but at this point my praise of them, as an edible quantity, must end.

I took a few nests of this teal in Rungpur, where, however, the bird is not common, one in Nadia, and a few in the Sundurbands. My first nests were all taken in the latter place and were nearly all placed on small trees, often babool or similar ones, standing on tiny islands in the centre of large bheels. With one exception, I think the birds had made the nests themselves. They were very roughly put together of twigs, sticks, and grass, and in a few cases covered—one can hardly say lined—with dirty masses of weeds. They average some 18 inches across, and were placed, not so often in forks, as on tangles of branches—sometimes, of course, in forks, and at other times where the first few big branches run from the bole of a large tree. One nest was placed in the crown of a date-palm—one of a small clump that stood on a

little hillock where there had been built the dirty and desolate little hut of some fisher-family. This had been deserted, probably the preceding year, and the Whistling-Teal reigned over the knoll and its contents.

One nest, from its size and construction, must have been made by a Fishing-Eagle, numbers of which breed in these same haunts, and doubtless also vary their usual diet with a duckling every now and then.

In Nadia, I took one nest of this species only, and I do not remember seeing any more of these birds in that district. Krishnagar, the headquarters town of Nadia, evidently once boasted a sporting community, as there is a racecourse—and a good one too—about a mile and a half from the station. Dotted here and there about the centre, and on the outskirts of this racecourse, there are a number of small tanks, all densely covered with weeds and surrounded by a thick fringe of bushes and trees, which afforded good cover to hare, jackals, and now and then a leopard. Overhanging one of these tanks and encroaching into the water itself was a fine banyan tree, and over the water, and resting on a number of branches which crossed and recrossed one another, a pair of Whistling-Teal had made their nest. It was quite an ideal place for a nest; the branches projected well over a deep tank, and, though supported by the numerous roots which had grown down from them, were yet not strong enough to bear the weight of a man. In addition to this, the brambles were so fearfully dense round the trees that it was an awful business to get to it. Eventually, after two visits had been made, we cut a narrow pathway through the jungle and sent an adventurous small boy up into the tree, who succeeded in clambering out to the nest and letting the eggs down in his puggree, or head-cloth.

In Rungpur I found them selecting big trees, and generally making their nests high up in them, some thirty feet or so from the ground. One nest I took from a large hollow in a dead tree. All the nests I saw in the district were made in trees growing beside the ditches which I have referred to in describing the Cotton-Teal's nest.

I have never seen their nests on the ground, but anyone hunting for them should not overlook the fact that they may be found to sometimes place their nests thus.

Barnes, *vide* his article on "Nesting in Western India," found this bird breeding at Hyderabad in Sind, and saw one nest which was placed in a babool tree, in the very centre of a large and deep jhil. Barnes doubted the authenticity of the eggs in his collection on account of their small size, and says that they measured 1.9 by 1.6 inches. This is smaller

than usual, but not remarkably so, and the difference in the size of their eggs is not half so great as is that between the two species of birds themselves.

The only note in Oates's edition of Hume's 'Nests and Eggs' is of a nest found at Saugor, C.P., and taken from a large hollow in an old tree. The hollow was well lined with twigs, grass, and a few feathers. The eggs, seven in number, varied between 2.12 and 2.25 inches, and between 1.65 and 1.75 in breadth. They breed in most places in July and August; in Nadia I took the nest at the end of June—I forget the date; and in Rungpur they breed principally in August, a few in September.

I have never taken more than 10 eggs from any nest, and think six to eight is the number most often laid, and I have taken four quite hard-set.

I have noticed that there is a very general tendency to overestimate the number of eggs laid by all game-birds, whether land or water; why this should be so I cannot tell, but that it *is* so cannot be doubted. Thus the majority of quails lay four eggs, few more than six; jungle-fowl lay five or six, often only two or three, sometimes eight or more, but this is the exception; bush- and bamboo-partridges almost invariably four or five. Of nearly all these birds, writers—generally anonymous, at other times good sportsmen but bad observers—have noticed their laying double the number and put that down as the normal number in a clutch.

After this digression, to return to the Whistling-Teal's eggs. They vary in no way from those of the smaller bird, though Oates says that they are perhaps of superior smoothness. This has not struck me, and I certainly could not discriminate between a small egg of *D. fulva* and a large one of *D. javanica*. When first laid they are a pure pearly white, often showing a slight gloss; this gloss goes off very quickly, and soon the eggs take a very faint greyish or yellowish tint, the shade depending, I think, on the water the pair of birds frequent and the material of which the nest is made. I have a clutch of eggs taken from a nest made principally of, and lined entirely with, rank weeds, and these eggs are faint, but distinct, yellowish underneath and pale greyish above. The normal shape of the egg is a very broad regular oval, but little smaller at one end than the other. Abnormal eggs are generally longer in shape, but I have seen none at all pointed. They are fine and smooth in texture, but inclined to be chalky and not very close-grained.

Twenty-five of my eggs average 2.09×1.69 inches. The smallest I have ever taken was 1.84×1.56 and the largest 2.40×2.01 ; but neither of these is now in my collection.

(19) DENDROCYCNA JAVANICA.

THE LESSER OR COMMON WHISTLING-TEAL.

Dendrocygna arcuata, *Hume, Str. Feath.* i, p. 260; *id. Nests & Eggs*, p. 639; *id. Str. Feath.* ii, p. 315; *Ball, ibid.* p. 483; *Oates, ibid.* v, p. 169.

Dendrocygna awsuree, *Jerdon, B. I.* iii, p. 786.

Dendrocygna javanica, *Hume & Davis. Str. Feath.* vi, pp. 486, 488; *Cripps, ibid.* vii, p. 311; *Hume, ibid.* viii, p. 71; *Hume, Cat.* no. 952; *Legge, B. of Cey.* p. 1069; *Hume & Mar. Game-B.* iii, p. 109; *Bingham, Str. Feath.* ix, p. 198; *Park, ibid.* p. 486; *Oates, Str. Feath.* x, p. 245; *id. B. of Brit. Burm.* ii, p. 273; *Barnes, B. of Bom.* p. 398; *Hume, Nests & Eggs (Oates ed.)*, iii, p. 284.

Dendrocygna javanica, *Salvadori, Cat. B. M.* xxvii, p. 156; *Blanford, Fauna B. I.* iv, p. 430.

Description. **Adult male.**—Forehead and crown brown, paler and reddish on the forehead, and darkest on the occiput; remainder of head and neck pale fulvous-grey, paler on the cheeks, and almost white on the chin and upper throat; this colour gradually changes into yellowish-grey or yellowish-fulvous on the breast, which again changes into the chestnut of the lower parts, and this again, in its turn, fades into the dirty creamy-white of the lower tail-coverts. Above, the colour of the neck changes into brown on the scapulars and back, where the feathers are broadly margined with golden-rufous; rump black; upper tail-coverts chestnut; tail brown, very narrowly margined with paler dingy rufous; lesser and median wing-coverts chestnut, the latter sometimes mixed with ashy; greater coverts dark ashy, rarely splashed with chestnut next the primaries; quills black, the inner secondaries more brown and edged with dingy ash-colour; flanks chestnut, the feathers sometimes centred paler; axillaries brown.

Irides dark brown; bill almost black to slaty-grey, with the nail darker; feet slaty brown to dull black. “Eyelids bright yellow” (*Salvadori*).

“The irides are deep brown; the eyelids bright yellow to pale golden; the legs and feet generally dark, at times somewhat pale plumbeous-blue, often dusky in patches, and on the webs and claws blackish; bill plumbeous to pale dull blue at the base, shading to black at the tip, the bill in some having a greater extent of plumbeous, in others black; the membrane between the rami of the lower mandible is generally pinkish.” (*Hume*.)

Length 16 to 17·5 inches, wing 6·92 to 8·04, tail about 2·5 to 3, tarsus 1·6 to 1·92, bill from gape 1·7 to 2·06.

“Length about 18 inches, wing 8, tail 2, bill at front $1\frac{1}{2}$, tarsus $1\frac{3}{4}$, mid-toe $2\frac{3}{4}$.” (*Jerdon*.)

Weight about 1 lb. to 1 lb. 6 ozs., the latter weight unusual.

Female.—Like the male, but perhaps averaging smaller.

The young.—"When just able to fly, do not differ very much from the adult, but are everywhere duller coloured. The margins to the feathers of the interscapular region are inconspicuous and dingy fulvous, and the entire lower surface a rather pale, dull, fulvous-brown." (*Hume.*)

There are few places in India where this very common bird may not be found, but outside our limits it does not extend very far. It is obtained throughout the Indo-Chinese countries and Siam, and in the Loochoo Islands, the Malay Peninsula, Sumatra, Borneo, and Java. Mr. C. B. Rickett obtained a specimen near Sharp Peak, close to Foochow, and it had been obtained on one or two other occasions in India. The bird shot by Mr. Rickett was killed in November.

The specimen said to have been brought home from Lake Tchad, in Central Africa, seems to have been recorded as the result of some mistake.

The Whistling-Teal is, in many parts of India, a local migrant, visiting them only during the rains; and this we can well understand, knowing how many places in Northern and North-western India change their character with the advent of the rains, from utterly dry, burnt-up tracts to well-watered wet ones.

Cripps says that it is not found in Dacca during the cold weather; but this I know is not now the case, as I have seen them there at that season, only they keep to the wetter portions of the district, and doubtless many do move to Sylhet, where there is never any want of swamps and bheels. In the same way many birds leave Cachar as the water subsides and go into Sylhet. In Bengal I think the question is entirely one of water-supply, and where the water is sufficient there these Teal will remain independent of the season. When, on the other hand, the water fails them, they go off elsewhere. In Sind they are rainy-weather visitors only, and they also leave the Deccan in great numbers as the waters dry up at the end of the cold weather. It is found throughout the Terai, but does not ascend very high, and most probably Hodgson's specimen was not really obtained in Nepal.

In Cachar it is extremely common all the year round in the plains, but never ascends the hills at all.

Hume, writing of this bird, says:—"It is essentially a tree-duck; it must have trees as well as water, and hence its entire absence from some pieces of water, in treeless parts of Rajputana, for instance, where other species of duck abound during the cold season. Yet it prefers level, or fairly level, tracts to very broken hilly country, and again, though in some



THE LESSER OR COMMON WHISTLING TEAL.
Dendrocygna javanica.

of Green, Chromo

places, *e. g.* at Taboy, it may be met with in rivers in enormous flocks, it, as a rule, prefers moderate-sized lakes and ponds to rivers.

“Owing to these preferences there are many tracts, as, for instance, portions of the Deccan, where it is extremely rare.”

This is quite true, but in Eastern India, more especially Bengal, nearly all the country is more or less well supplied with trees and also water, so that local migrations are not necessary, and therefore not indulged in except in the very narrowest sense of the word.

The same applies to Ceylon, where Legge describes them as permanent, but moving to and from certain places with the season.

Hume says that it seems to be a permanent resident only in districts which are *well drained* as well as possessing other attributes. This is certainly not the case in many or most parts of Bengal, where the birds are resident, however ill-drained the district may be.

It is quite the exception for them to be seen in any number on rivers and open *clean* pieces of water; they prefer tanks, backwaters, swamps, and lakes, the latter especially when they are well covered with weeds or vegetation.

My first duck-shooting in India was obtained in Jessore, and until then I had no idea of the vast numbers in which duck of different kinds assemble. Teal of sorts were common, and Gadwall, Pintail, and many Ducks also, but the Whistling-Teal must have numbered at least one hundred to each one of all the other kinds included. It was almost incredible the enormous flocks in which they assembled; thousands and thousands flew on every side of us as we shot, and the dull rumblings of their wings were heard a mile away or more, even before they were disturbed. We did not, of course, shoot them, but we found them a horrible nuisance, for they were quite as wild as the other ducks, and whenever a careful stalk had enabled us to get almost within shot of a fat lot of Gadwall, or nice flock of Blue-winged Teal, or other much-to-be-desired game, some wretched Whistling-Teal was sure to pop out of an unnoticed piece of cover and make off with loud whistlings and whirring wings, followed by every other duck within two or three hundred yards. A few, perhaps, of the Whistling-Teal might pass us within shot, but it was almost certain that the duck we wanted would not.

It is very difficult to estimate how many birds there were on the Moolna Bheel when I first visited that grand shooting-ground, but there must certainly have been sometimes *hundreds* of thousands on the wing at once.

Often when we approached some piece of water, where the reeds and rushes grew so rank that we got right in before we fired, the Whistlers would rise at the shot in masses before us, almost carrying out that old figure of speech "darkening the air." I was greatly struck on these occasions by the attitudes of the birds, which reminded me much of ancient prints on duck-shooting, the birds with their long necks outstretched rising straight up for some height until they got fairly started, when they fly off parallel with the water, generally about 30 or 40 feet up, and not very fast in spite of their noisy flight. Hume, Legge, and many others have mentioned the rapidity with which they beat their wings, and have also noted the smallness of the result when compared with the amount of exertion used. When found in small flocks, that is to say, up to about fifty or so, on tanks, ponds, and small pieces of water, they often fly round and round the place before leaving it, and more particularly is this the case when, there being no other water very close by, they are loath to quit the piece from which they have been roused. In the vast pieces of water in the delta of the Ganges I did not notice this habit so much. When first disturbed, and the birds get up all at once, it would seem that they form a flock numbering some thousands; but they soon divide into smaller ones, seldom numbering over two or three hundred, and then with a preliminary wheel or two fly off to some other part of the swamp. Why they should be so wild in the Sunderbans and yet so tame in most parts of their habitat, I cannot explain. They are not much shot at, as the inhabitants are nearly all fisher-people, who possess but few guns, and who get their duck by driving them into nets and not by shooting them.

I have never, in any part of Bengal, known them to be so tame as to require stoning to induce them to leave a tree, as Hume says is necessary in many parts; yet in Rungpur, Furreedpur, and some other districts they are so confiding that to get a sitting shot would be a very easy feat were it desirable, and the birds do not fly until the last moment. They perch very freely on trees, even during the non-breeding season, but I think that, as a rule, they rest, when in flocks, on the water and not on trees, though sometimes, of course, they do rest during the heat of the day on trees. Hume, indeed, says they generally rest thus, and this habit again may be one of locality, varying in the different parts it affects.

At night I think they roost almost invariably on trees, and even where they are shy and wild, and feed in the evening and early morning, the middle of the night is probably passed roosting on trees. They very rarely rest on land, as do their larger brethren, *D. fulva*, and I have never

personally seen them thus actually on land. The only time I have seen a flock of any size on a tree was once when, passing under a huge banyan tree, a large flock flew out just overhead. I was riding when they started, but I remember that as they departed out of sight I viewed the last of them from the ground on which I was reclining in a semi-sitting posture. I forget now which got out of sight first, the Teal or my pony—the latter a skittish T. B. Waler.

Banyan trees are very favourite resorts of this bird, because, doubtless, of the large horizontal branches which are so numerous, and which give them good foothold without calling on the powers of grasping to too great an extent. They are quick, strong swimmers, and very good divers also, but I have not known them dive and remain under water, holding on to weeds, &c., as some ducks do. As a rule, a wounded bird dives and scurries under water at a great pace for about ten to twenty yards and then reappears, once more to dive as the would-be catcher thinks that at last he has got it.

They feed on anything and everything, but bring up their young principally on animal food, and they themselves, in an adult state, probably prefer vegetable food. They graze often in the rice-fields, but only when the plant is very young, and I have seen them grazing on the coarse dhub-grass which often grows on sandy spots at the edges of tanks and jhils in the cold weather.

I have found that they eat large quantities of a very small freshwater snail; this has a very brittle shell, and so is probably easily crushed and digested. These snails might account for the flavour of which the bird is unfortunately so often the possessor. Anyway, it is most rare to find a Whistling-Teal fit to eat, though it is not an impossibility to get such, a young bird just at the commencement of the cold weather being the most likely to furnish an edible dish.

Their note is described by their name, and is a regular whistle, not very clear, rather sibilant, and by no means harsh or shrill. It is uttered constantly whilst on the wing, especially when first rising and during the first few wheels. I have also heard it, during the breeding-season, give vent to a low chuckling, not unlike the garrulous notes of the Cotton-Teal, but more nearly approaching the quack of a true duck.

It is a most charming little duck in captivity, and most easy to tame; indeed, so confiding do they become that it is often possible to keep them in complete freedom without their making any attempt to leave the piece of water on which they reside. They soon learn to come when called and

be fed out of the hand, and even strangers seem to in no way distract them.

In captivity they whistle freely as they walk and swim about, and when called to soon get into the habit of whistling in reply. They have a curious propensity for walking very great distances, when tame, in search of food, returning home in the evenings, &c., and will thus often walk several hundred yards rather than fly. When there are several birds all kept together, they nearly always walk along in a line just as geese so often do.

No article on ducks could possibly be complete without Hume's story of the Whistling-Teal, Crows, Cat, and Dogs, so it must be here quoted in full :—

“I once saw a good large, half-wild village cat spring down upon a duck, which was sitting on her nest in a broad four-pronged fork of a mango tree. The duck did not whistle in the usual manner, she positively screamed ; in a second the drake dashed at the cat, and to my surprise down came a black crow (*C. macrorhynchus*), not, as anyone would have thought, to steal the eggs in the confusion, but to assail the cat with his claws and beak as if his own homestead had been attacked. In less time than it takes to describe, the cat was squalling in her turn, and fled up one of the branches, pursued closely by the drake and the crow, who were immediately joined by another crow, and the three made it so hot for pussy that she sprang to the ground, where my dogs, aroused by the uproar above (the noise those two crows made was astounding), were awaiting her, and before I could interfere, and before she quite recovered the jump of some 35 or 40 feet, killed her outright. But the strangest part of the business was that the villagers assured me that this nest was the crow's own nest, and that *they lent it every year*, after their young had flown, to the Whistling-Teal. I should have verified this the next spring, but left the Mynpooree district, and never again had a chance of visiting the spot.”

Normally and typically both our Indian *Dendrocygna* build nests on trees or lay their eggs in their hollows ; often, however, they make use of the deserted nests of other birds, and sometimes they build nests on or near the ground, in reeds, grass, or other bushes. The recorded and authenticated instances of the Common Whistling-Teal laying its eggs in nests placed on the ground are, however, also fairly numerous.

Barnes, in vol. i. of the B. N. H. S. Journal, recorded the fact that in Neemuch he never found their nests on trees, but always amongst rushes growing on the edges of banks.

Oates, in 'Birds of British Burmah,' says that he has "frequently found its nest in Pegu in July and August—a mass of dead leaves and grass placed on a low thick cane-brake in paddy-land, and containing six very smooth white eggs. . . . Those nests I myself found were invariably situated, as above described, on cane-brakes."

Jerdon also says that "It generally, perhaps, breeds in the drier patches of grass on the ground, often at a considerable distance from water, carefully concealing its nest by intertwining some blades of grass over it."

Lastly, Legge notes in 'Birds of Ceylon':—"It sometimes builds on the ground among the rushes or tussocks, and even in reeds, the nest half floating in water."

In 'Game-Birds,' Hume's notes on the nidification of this species are very full and interesting, containing practically every known situation for the nest. Thus Capt. Butler took the nest from a tussock of grass growing out of a dried stick fence; Mr. Doig and he took them frequently from creeper-covered tamarisk-jungle growing in water, and the former also found them placed on the tops of clumps of bulrushes.

Mr. J. Davidson also found the nests on the ground in Mysore, where they were placed in tufts of grass which formed islands in the middle of weedy tanks.

Cripps found that in Dacca, Furreedpur, and Sylhet they breed both on trees and on the ground.

In the Dibrugarh District of Assam I found that the Whistling-Teal almost invariably placed their nests on high pieces of land standing in swamps. In the north of the district I noticed that the Whistling-Teals were locally migratory. In June, in certain places, not a single bird was to be seen, perhaps, in a long morning's walk; but in July, by the time the water had collected in the low-lying land, forming wide though shallow stretches of water, the birds had gathered in hundreds, and were busy over their domestic arrangements. Often across these pieces of water the villagers had made raised banks from one side to the other, either to cut off their special patch of cultivation or as a path. The centre of these banks were, as a rule, trodden bare, but the sides were, more or less, covered with dense grass, some two or three feet high, and in such places the Whistlers placed their nests.

They also made use of the high ground surrounding the deeper pieces of water, which formed small banks in the cold weather, but in the rains formed tiny circular islands. The nests here were massive structures of grass and water-weeds, and were always very well concealed, the covering

grass in every case forming a dome completely covering them and hiding them from sight, even when one stood actually over them.

Except in this district, I have never seen a nest actually on the ground, but have taken one or two from situations very close to it. In Cachar, at the foot of the hills there is much broken ground, often intersected by nullahs which widen out here and there into swamps and bheels. Here the Whistling-Teal is in its element, and has an enormous variety of sites to choose from. The one I have found most often selected is some clump of trees, generally babool or a stunted species of large-leaved, densely-foliaged tree which grows, often, actually in the water. When the rains are on, these small clumps form oases in the centre of a watery desert, and when the floods are at their height show merely a few feet of their crests above water, on one of which the ducks build their nest, a rough-and-ready construction of weeds, sun-grass, and rushes, rarely lined with a few feathers. Sometimes a good many twigs are used, more especially when the nests are placed in babool trees, where, owing to the support being less compact, the nest itself is bound to be stronger and better put together. The situation next most often chosen as a site for the nest is up one of the arms of these bheels, which seldom, if ever, have deep water in them, but at the same time, from collecting moisture drained off surrounding hills, are always wet and moist. In these places the canes, reeds, and other vegetation grow to a great height, often 12 feet or more, and are so rank and tangled that their tops will bear no inconsiderable weight. When building the nest in one of these tangles the birds place it some two or three feet from the top, the density of which protects it greatly from rain, &c. The nest itself is of the roughest description, a mere thick, coarse pad of grass, reeds, and, perhaps, a few creepers, measuring some 18 to 24 inches in diameter, and with no more depression in the centre than is caused by the birds constantly sitting in them.

Now and then the nest is found on trees close by villages and near some tank or piece of water. When on this kind of tree the nest may be placed either on one of the bigger forks or in a large hollow, and when in the former place are quite well-built nests of twigs lined with grass and a few feathers. If, on the contrary, they are in the hollows, the nest is scanty and sometimes merely consists of the fragments naturally contained in the hole.

In Rungpur I found nearly all my nests on trees, though very often they were not built by the birds themselves, but they used old crows' nests sometimes, old kites' nests frequently. I should mention that the crows'

nests the birds used were always those of *C. splendens*, and it seems to me very remarkable that this duck should find room to lay and hatch some six to a dozen eggs in a nest as small as that usually built by *C. macrorhynchus*, as this crow generally makes such a compact, neat nest, with very little waste room about it. I should imagine the Jungle-Crow in Hume's anecdote, given above, must have been an extravagant, wasteful bird, or else have taken house-rent from the Teal and charged per square yard of room.

Most nests are not placed at any great height from the ground, seldom over twenty feet or so, but I have taken one or two from far greater heights.

As regards the number of eggs laid there is a good deal of difference in the maximum normal number as estimated by various observers.

Jerdon, Butler, Doig, Davidson, Cripps, and I myself consider about eight to ten to be the normal number laid, though in Cachar the former number is the largest I remember taking. Oates gives six or seven, whilst Anderson says that ordinarily this bird lays a dozen.

In Dibrugarh, where I took very many nests, indeed sometimes seven or eight in a morning, I found six to eight to be the normal number, though I once found eleven. On the other hand, I several times took hard-set clutches numbering only four or five.

Probably eight to ten is the number most often laid, and whilst in some districts, probably to the east, they may average fewer, yet, on the other hand, in some, more to the west, the average clutch may be somewhat larger.

The eggs are like those already described as belonging to *D. fulva*, that is to say, they are very spherical ovals, but little compressed at the smaller end, and in texture are very smooth and fine, but neither very close-grained nor glossy, and somewhat chalky on the surface. They are nearly pure white, sometimes inclined to ivory-white when first laid, but stain quickly and soon lose the faint gloss they sometimes show at first.

Hume, in a footnote to 'Game-Birds,' says that the lining-membrane of this Teal's egg is a delicate salmon-pink, and gives a faint rosy tinge to perfectly fresh unblown eggs. I have now examined a huge series of these eggs, but have failed to find any with the lining-membrane so coloured. When fresh, all the eggs blown by me have had this membrane a very dull dead lemon-colour, and when dry it is of a dead grey-white. I should have said that the tint of eggs in the condition he describes was more of a very faint and very dull creamy-yellow rather than rosy, but, as a matter of fact,

the shells are thick and have very little transparency, and as a rule the yolk gives no tint at all to the shell.

All my eggs come within the average given by Oates in Hume's 'Nests and Eggs,' viz., length from 1.72 to 2.0 inches, and breadth from 1.4 to 1.6. The average of over 150 eggs taken by me is, however, larger, and measures 1.89×1.52 inches.

The duck is a very close sitter, and will not move from her eggs until very closely approached; indeed she may sometimes be caught by hand. Mr. Brooks thus caught a duck on her nest, which was placed at the bottom of a hollow in a dead stump.

The drake keeps much to the tree where the nest is, and spends much of his time alongside his mate on the nearest comfortable perch, but I have never been able to ascertain whether he assists in the incubation.

In different parts of the country they breed from late June up to September: in Eastern Bengal principally in July, in West Bengal late July and early August, in Western India later still. Barnes says that in Rajputana they breed in August and September.

In Ceylon it is one of the birds that does not alter its habits of breeding much, and there they lay in June and July.





THE SHELDRAKE.
Ladornia cornuta

JOHN J. J. J.

Genus TADORNA.

This genus consists of two species, one of which has a wide range throughout Europe, Asia, and Africa, and the other being confined to Australia, the Moluccas, and Papuan Islands. The male bird possesses a fleshy knob at the base of the upper mandible, which is highly developed during the breeding-season.

(20) TADORNA CORNUTA.

THE SHELDRAKE.

Tadorna cornuta, *Hume, Str. Feath.* i, p. 260; vii, p. 492; viii, p. 115; *id. Cat.* no. 956; *Hume & Mar. Game-B.* iii, p. 136; *Barnes, B. of Bom.* p. 400; *Salvadori, Cat. B. M.* xxvii, p. 171; *Young, Jour. B. N. H. S.* xii, p. 573; *Betham, ibid.* xiii, p. 187; *Inglis, ibid.* xiv, p. 393; *Blanford, Fauna B. I.* iv, p. 427.

Tadorna vulpanser, *Jerdon, B. I.* iii, p. 794.

Description. **Adult male.**—"Head and upper part of the neck dark glossy green; round the lower neck a broad white collar; a band of rich chestnut covers the upper part of the back, the space before the bend of the wing, and the upper part of the breast; remainder of back, rump, and upper tail-coverts white; scapulars black, except the inner ones, which are white; a band along the middle of the breast and belly dark brown; sides and flanks white; under tail-coverts rufous; wing-coverts white; primaries very dark brown; speculum on the secondaries green; long inner secondaries with rich chestnut outer webs; tail-feathers white, tipped with black: bill and knob at the base bright red; irides brown; legs, toes, and their membranes flesh-pink.

"Total length 24 to 26 inches, wing 13, tail 5·2, culmen 2·4, tarsus 2." (*Salvadori.*)

In adults the bills are deep red; the nail dusky; the irides brown; and the legs and feet flesh-pink to fleshy-red, often more or less creamy on the front of the toes and tarsi.

"Length 23·5 to 25·25 inches, expanse 41 to 46, wing 12·5 to 13·6, tail from vent 4·75 to 5·5, tarsus 2·1 to 2·3, bill from gape 2·2 to 2·4. Weight 2 lbs. to 2 lbs. 14 ozs." (*Hume.*)

Female.—Differs from the male in being less brightly coloured, having no knob at the base of the bill, and in being smaller.

"Length 20·8 to 22 inches, expanse 39 to 42, wing 11·75 to 12·4, tail from vent 4·2 to 4·9, tarsus 1·95 to 2·07, bill from gape 2·1 to 2·2. Weight 2 lbs. to 2 lbs. 2 ozs." (*Hume.*)

Young birds at the age when they arrive in India are duller coloured than the adults, have the bills a dull brick-red, and the feet livid fleshy.

Young birds of the year "in August have the bill flesh-coloured, the head and neck brown, chin and front of the neck white; interscapulars brown; wing-coverts white; inner secondaries white, edged with chestnut; primaries black; speculum becoming green; all the under surface white; legs flesh-colour." (*Yarrell.*)

Nestlings in down "are dark brown above and white below, the white on the underparts extending to the forehead, sides of the head and neck, wings, scapular region, and sides of the rump." (*Seebohm.*)

During the summer the habitat of this bird extends from the British Isles throughout the whole of Northern Europe as far south as Central Germany and the south of the Caspian Sea in Russia, South Siberia, Turkestan, Northern China, and Japan. In the winter it ranges south to Northern Africa, South Asia as far as Northern India, South China, Japan, and Formosa.

In India it is confined entirely to the northern portion, and even there it is by no means a common visitant, though it is common in Afghanistan and not rare in Baluchistan. Hume gives its southern limits as the 22nd parallel, and it extends as a rare visitant through Sind, the Punjab and the North-West Provinces, and Oudh.

From Central India it has been recorded by Young, who saw three specimens on a tank about 40 miles south of Nemuch in 1891-92. Betham records it from Poona. In Bengal its occurrence is rare; it has been obtained once or twice near Calcutta, and Mr. Finn writes to me: "As to the occurrence of the Sheldrake in the Calcutta bazaar, I have seen or got it several times since I came out here in 1894, and only to-day two dead immature birds were brought me. I have seen at least one more this winter from up country." Only recently Kashmir has been added to its habitat, a pair having been twice met with in that locality. This extremely handsome and conspicuous bird, although one would think so little likely to be overlooked, and having a wide possible range through Northern India, is yet but seldom met with, and is never, or hardly ever, seen for any length of time in one locality. This, as Hume explains, is probably due to the fact that their natural habitat is not fresh water, but the sea-shore, and the sea-shore where it is clean. Most of our shore is not clean, and very little of it is visited and well known, so that even the few birds which do haunt it may well escape observation. The rest who make up their minds on India for a winter habitat are compelled to resort to the

largest pieces of water they can find which have suitable sandy shores and churs on which they may walk about. They are essentially land and not water ducks, and may be found nine times out of ten strutting about or resting quietly on some sandy bank or shore. When disturbed they do not take to the water and thence to wing, but at once rise into the air, uttering their shrill call as they first take the alarm, and once in flight they soon put a long distance between themselves and the cause of their disturbance. They are strong both on the leg and the wing ; on the former their actions are decidedly more goose- than duck-like, and they walk well, quickly, and in a very erect attitude. When flying, on the other hand, they approach more nearly the ducks, making less commotion with their wings than do the geese. I have never heard their note, but it has been variously described, and is, as far as I can make out, a very similar cry to that of the Brahminy Duck in the breeding-season, but more shrill and high-pitched at other times. Hume calls it a harsh quack, which, he says, might perhaps be called a whistle.

They dive well and swim well, but are loth to take to either expedient, and it is only when severely wounded that they resort to it. As they feed principally in shallow water their diving is not called into action, though they often retain their heads under water for long periods.

Hume on two occasions noticed birds "washing and sluicing themselves with an energy and persistence that I have rarely seen equalled in any other species." He then, also, noticed that the birds remained with their heads under water quite as long at a stretch as any of the true diving ducks would have done.

Their food appears to be mainly animal and consists of shell-fish, water-insects, prawns, and shrimps, and practically all or any of the small animal-life found on the shores at low tide or in shallow water. A small amount of vegetable matter is doubtless eaten now and then, but merely as one takes vegetable with a meat diet.

Of course, they are not good to eat ; which of the animal-eating ducks are ? and Hume says even skinning has no effect. It is certainly not to be expected it would have much, as flavour, unlike beauty, is more than skin deep, though skinning has with many birds a certain amount of good effect.

It does not breed with us, but does not go far for the purpose. It breeds extensively in Turkestan, and thence through Russia to our own British coasts, where it is common enough. It has been found breeding as far north as Iceland and Greenland, though not extensively in either

country. As a rule, it selects as a site for its nest some deserted burrow, it matters little to what it belongs, or did belong, and places its nest at the bottom. It has been said to live in amity with rabbits, and even badgers, and to have taken to burrows ex-tenanted by foxes, the smell alone of which would have made most ducks require sal volatile in the nest.

Where there are no burrows available, they will place their nest at the bottom of some natural hole or crevice in the shore or amongst the rocks.

They make a good substantial foundation for their nest of grass, reeds, sticks, or any other similar material, and then make a luxuriant bed out of their own down, in which their eggs are deposited. In Holland, this down and the eggs form articles of no little commercial value, and special arrangements are made to accommodate the birds and induce them to give their patronage to certain spots. The Sheldrake is fortunately fond of company when undergoing the worries of a family, or the preparation for it. The Dutch therefore select a suitable spot, for choice the natural breeding-place of the duck, and construct neat burrows, slanting at the right angle and wide and deep enough to please the bird, yet not deep enough to balk their own desires. Left to itself the bird would as soon build in a 14-foot as in a 4-foot burrow, but it would be impossible to tackle many of the former and yet make money out of the collecting of the eggs and down, so the artificial burrows are made of the latter depth. As soon as the eggs are laid the nests are rifled, and the down and eggs taken away, whereupon the ducks once more reline their nests, not so well or thoroughly, of course, as they did their first, and lay a second clutch of eggs, which they are allowed to hatch and rear in peace.

Normally they are said to lay from 8 to 16 eggs, but should the first clutch be taken, they lay another, and in this way the number may reach as much or more than 30.

Hume says :—"The eggs vary a great deal in shape, some are very round, some only moderately broad ovals. In texture the shell is very close and smooth, very like that of the Nukhta's egg. In colour they vary from nearly pure white to a pale cream-colour, sometimes showing the greenish tinge of the Mallard's egg.

"In length they vary from 2.45 to 2.75 inches and in breadth from 1.75 to 1.95.

"The young are hatched in from 28 to 30 days, and are immediately led to the sea by the old ones."

Morris ('British Birds and their Eggs,' iii. p. 73) writes :—"The eggs are ten or twelve or even more, it is said thirteen or fourteen or even

sixteen in number ; but these in such cases may have been the produce of two birds. They are nearly perfectly white, having only a very faint tinge of green, and are smooth and shining. They are equally round at both ends.

“The hen bird sits, as is believed, from about 26 to 30 days, her mate keeping watch hard by and taking her place in the morning and evening while she picks up some food.

“The young, when hatched, are either carried by their parents in their bills to the water, or soon make their way thither themselves. They hide themselves away at the approach of danger, the old ones, conscious no doubt that they are able thus best to find security, flying off themselves.”

The eggs in my own collection agree well with the above descriptions, but are a very pure white with only a faint yellowish-cream tint ; they are very glossy and smooth, even for duck's eggs.

Genus CASARCA.

The genus *Casarca* consists of four species, of which four the widest spread is the well-known Indian Brahminy. Of the others, *C. cana* is confined to South Africa, *C. variegata* to New Zealand, and *C. tadornoides* to Australia and Tasmania. Of the four, also, the Indian is the only migratory one, the others being local residents or only locally migratory. The bill differs from that of *Tadorna* in being no broader or narrower at the tip than at the base. The lamellæ also are more prominent at the base of the upper mandible, whereas in *Tadorna* they are more developed towards the tip.

Both sexes have a rudimentary spur on the shoulder (carpal joint).

(21) CASARCA RUTILA.

THE RUDDY SHELDRAKE OR BRAHMINY DUCK.

Casarca rutila, Jerdon, *B. I.* iii, p. 791; Hume, *Str. Feath.* i, p. 260; Adam, *ibid.* p. 401; Hume, *Nests & Eggs*, p. 641; Ball, *Str. Feath.* ii, p. 457; Hume, *ibid.* iii, p. 193; Butler, *ibid.* iv, p. 28; Scully, *ibid.* p. 198; Fairbank, *ibid.* p. 264; Butler, *ibid.* v, p. 234; Hume & Davis, *ibid.* vi, p. 489; Hume, *ibid.* viii, p. 115; Scully, *ibid.* p. 362; Hume & Mar. Game-B. iii, p. 123; Oates, *Str. Feath.* x, p. 245; Salvadori, *Cat. B. M.* xxvii, p. 177; Blanford, *Fauna B. I.* iv, p. 428.

Tadorna casarca, Legge, *B. of Cey.* pp. 1070, 1222 (Appendix); Oates, *B. of Brit. Burm.* ii, p. 277; Hume, *Nests & Eggs* (Oates ed.), iii, p. 280.

Description. **Adult male.**—Whole head and upper part of the neck buff, changing gradually into bright orange-brown at the base of the latter. Scapularies and back, flanks, and whole lower plumage rather bright orange-brown, lower back finely vermiculated black and rufous; upper tail-coverts and tail black; wing-coverts white, quills black; secondaries glossed rich green on the outer webs, forming a well-defined speculum. Hume says that the speculum may be either bronze or green, but I have personally seen none of the former colour.

Inner secondaries light buff, more or less tinged with rufous on the outer web, and principally grey on the inner; axillaries and under wing-coverts white.

In the breeding-season there is a black collar at the base of the neck, usually very indistinct in Indian birds and often absent.



THE RUDDY SHELDRAKE OR BRAHMINY DUCK.
Querquedula rufula

of Green, Chromo.

Bill and feet black, irides rich brown.

"Length 24·5 to 27·0 inches, expanse 48·0 to 52·5, wing 14·25 to 15·5, tail from vent 5·4 to 6·3, tarsus 2·3 to 2·7, bill from gape 2·2 to 2·4. Weight 3 lbs. to 4 lbs. 4 ozs." (*Hume*.)

In the cold weather the majority of the drakes have their white wing-coverts much suffused with rufous. Hume had specimens practically having their wing-coverts and lower plumage concolorous.

Adult female.—Differs in being smaller, and in having the head paler and "in having (at any rate, during the cold season) the whole anterior portion of the head white" (*Hume*). The black collar is never assumed.

"Length 21·75 to 24·0 inches, expanse 42·5 to 47·75, wing 12·36 to 14·0, tail from vent 5·06 to 6·0, tarsus 2·12 to 2·4, bill from gape 2·0 to 2·3. Weight 2 lbs. 1 oz. to 3 lbs. 5 ozs." (*Hume*.)

Young of the first season.—Generally like the female but rather duller, the scapulars and upper part vermiculated brown and pale rufous; the inner secondaries brown, more or less vermiculated with reddish-buff, more especially on the inner web; tail with narrow obsolete bars of rufous and distinctly tipped with the same.

In India many birds are met with in their transition-stage between this and the fully adult plumage. I have now a fine young male before me with adult scapulars, but the back shows fine vermiculations of brown, the tail and inner secondaries are those of the young bird, and the whole lower plumage has the feathers very faintly and indistinctly tipped paler.

In this bird the feet are purplish-black, irides bright brown, and bill slaty-black.

"A nestling brought from Tso-mourari is mostly white, marked on the upper surface with blackish-brown, and with here and there a fulvous tinge." (*Hume*.)

The Brahminy is not a bird of very northern latitudes, even during the breeding-season. In summer it is found in Spain, though in small numbers only, throughout Southern Europe and Northern Africa, and thence through Asia Minor, Turkestan, Afghanistan, and extreme Northern India at altitudes over 10,000 feet, through China in the north, and Japan. It has been recorded from nearly all North European countries, including Great Britain, but nowhere as anything but rare. In 1892 Messrs. Pearson recorded it from Iceland in the 'Ibis' for 1895, p. 247, and the same year it was recorded as having been seen in 1892 even further north than this, viz. in the Upernivik district of Western Greenland, by Dr. Van Höffen, who was naturalist to the Drygalski expedition in 1892-93.

In winter it resorts to the plains of India, Northern Burmah, South China, and Japan and Formosa. In India the only places from which it has not been recorded are such as do not afford sufficient water, and they are practically unknown in the waterless tracts of portions of Sind and

Rajputana. From as far south as Ceylon they are noted as not uncommon. Legge, in the Appendix to the 'Birds of Ceylon,' says :—"This Sheldrake can no longer be relegated to the doubtful or unprocured species in the Ceylon lists. Mr. G. Simpson, of the Indian Telegraph Department, has lately sent a portion of the skin of a male shot by him in the Jaffna district to Mr. Parker for identification. He likewise furnishes a description of the bird, which has been forwarded to me, and there is no doubt about the matter. The wing of the example in question measures 14·75 inches. Mr. Simpson says they are not uncommon in the cool season on the Jaffna lake, near Pooneryn, and on the Delft, Palverainkadoo and Mullaittivu lagoons. They are, he finds, very wary, flying high when disturbed, and uttering a note like *conk, conk*."

To Southern Burmah it is a very rare straggler, and I can find none but anonymous records of its occurrence there.

Oates observes (*in loc. cit.*): "The Brahminy Duck is a visitor to the Province from October to March. It is very abundant in the large rivers of Pegu; but Mr. Davison did not observe it in Tenasserim. It is probably common in Arrakan, whence Mr. Blyth received it."

Like Mr. Inglis, I have found the Ruddy Sheldrake a rare bird in Cachar, and not common in East Sylhet, where the rivers are too muddy and are wanting in suitable sandy banks and churs. In South and West Sylhet they are much more common, for there the rivers begin to widen out into fine clear streams.

In Orissa it is not uncommon to find this bird on the salt backwaters and pools and even on the shore itself. It is very common on the Chilka Lake, and I have seen it on the brackish tidal waters of the Sunderbunds.

Except in midwinter, they are to be met with in considerable numbers in the lofty valleys of the Himalayan rivers, in Kashmir, and at other equally lofty elevations, and from thence down to the level of the plain. In Kashmir they appear to be met with more or less throughout the cold season, but, probably, desert the higher valleys of the Himalayas during the coldest period.

Hume says : "They arrive in flocks, and before leaving in April gather again into these, but during the winter they are almost invariably seen in pairs. Often several pairs may be seen congregating in the same place, but even then each pair separates on any alarm and acts on its own behalf and without reference to the others."

In Bengal, and further south probably, few people see them in flocks, even when they arrive or when about to depart, as the flocks seem to



THE COMMON WILD-DUCK OR MALLARD.

Anas boschas

break up soon after their arrival in Northern India, and the pairs then make their way to their final destination, free from the influence of the birds they started with. In Northern India the first few birds arrive as early as—perhaps even earlier than—the end of September, and then work slowly south, arriving in Central India and adjoining Provinces at least a month later, nor are they common in Bengal until early November. In Southern India they are rare before the end of that month. The latter part of the country they leave again in the end of February and early in March, by the middle of that month nearly all have left Lower Bengal, the Central Provinces, and Central Bombay, and by the beginning of April they are just thinning in Northern India and most have gone before May sets in. They have been, of course, recorded throughout that month, and even in Bengal I once saw a pair in the end of April, but these are, I think, but examples of the exceptions that prove the rule.

The Brahminy is not an object of sport with Europeans, save for those whose motto is “kill what, when, and where you can”; this principally because, even when divested of its tough and greasy skin, he is not worth eating, unless with an extra dose of the hunger sauce. He is, however, well worth while to shoot, or try to shoot, if you are not an old hand at duck-shooting, for by the time you have learnt to circumvent and bring to bag “Chakwa and Chakwi” you may rest satisfied that you have learnt most of the arts necessary to render stalking ducks and geese a successful pastime. They are, as is almost universally admitted, the most cute and difficult of approach of all their tribe. Possibly the crow alone exceeds them in their aptness for learning the range of a gun; they will nearly always allow of an approach of within two hundred yards, often within one hundred and fifty yards, and this with such a devil-me-care unconcerned look about them that one would imagine a closer approach to be an act of very little care indeed. Anyone who attempts to work on this presumption will soon find out their error; should the stalk be made with some, yet insufficient, care, the Brahminy will allow you to come a few yards further, and then leave for another and better land (or water). On the other hand, should the stalker be so careful as to keep well enough hidden to entirely evade the watchful eye, he is not allowed to approach any nearer at all, but is given the benefit of the doubt, and all he will find of the bird when he arrives will be the impression of his feet in the sand.

Practice may sometimes be had on the larger rivers, where they are plentiful, with one of the modern small-bore rifles, with which one ought

to be able to kill at two hundred yards ; very soon, however, they learn to fix the range even of these weapons, and new ground will have to be sought for, for future shooting. Hume, writing of this form of shooting the Brahminy, says : "After being at this game a few days and killing five or six, not a Brahminy in the neighbourhood would let you approach within a quarter of a mile, and thenceforth they give you so wide a berth that they interfere very little with fowling."

It is decidedly a bird of clean, clear water predilections, and may generally be found in the larger rivers on the wide sand-churs which form each cold weather as the water sinks. They like such as are clean stretches of sand, devoid, or almost devoid, of vegetation, and they keep much to the land, though not so exclusively to it as the Common Sheldrake. Of course, where there are no rivers the Brahminy does not disdain any ordinary lake or large piece of water, but he eschews such as have much jungle about them and have their shores all more or less closed with the same, or with growing crops, unless the latter are very young and short. Small dirty ponds and weedy tanks he will have nothing to do with, except when in the direst distress, nor will he willingly frequent small nullahs and rivers with muddy banks. Even when there are fine open pieces of water he will always leave these and resort in preference to sandy tanks and churs, should such be in the vicinity, though he may visit the former now and then to feed.

The bird has been frequently tamed, and becomes very domesticated. Some writers, Hume amongst them, speak well of their character under such circumstances, and say that they are gentle and forbearing to other ducks which may be sharing their captivity. Mr. Finn, however, says that, from what he knows of it, "it is by no means the gentle and inoffensive bird in captivity that Hume makes it out to be, but is decidedly ill-conditioned and given to persecuting other water-fowl."

Everyone knows the legend about the Brahminy which is held by the natives to account for only two birds being found together. They are supposed to be inhabited by the souls of lovers who have sinned. Once two lovers, who were prevented from marriage by their parents, determined to take the matter into their own hands and risk the displeasure of the gods. Eventually the lady escaped from supervision and went straight to her lover, who was awaiting her; but they enjoyed their liberty only for twenty-four hours, for the next night they were changed into Brahminy Ducks and were condemned ever to keep on opposite sides of the stream, and though they were allowed to speak to one another and to ask if they

might come, the other was forced ever to reply in the negative. Hume ridicules the legend, and says he has never met a native who had heard of it ; all I can say is that I have repeatedly.

At night, when feeding, the birds will often wander far apart, and may be heard calling to one another in their short dissyllabic notes, which are rendered by the natives into "*Chakwi, shall I come ?*" "*No, Chakwa !*" and then "*Chakwa, shall I come ?*" with the reply "*No, Chakwi !*"

The Hindustani words for these questions and answers are not at all unlike their notes, which are loud and resonant, far more goose- than duck-like in their character. Elliot, Pallas, Jerdon, &c., syllabize it as á-oung, others as conk, conk ; perhaps a combination of these two into à-onk, gives as good an idea of the note as any other accumulation of letters.

They are good swimmers as well as quick and agile divers, but do not seem to be able to keep under water long, nor do they appear to ever attempt to conceal themselves under water. On the wing they are decidedly strong, but are noisy risers, though not slow ones. The movements of its wings are less rapid than the majority of the Anatidæ, and give one the impression that its progress is far slower than it really is. They are good walkers, and though generally their movements are marked more by dignity and deliberation than haste, they are capable of very good performances as pedestrians. Their attitudes on land are more those of geese than of ducks.

They are not at all shy birds, nor are they at all wild in the ordinary acceptation of the word. They object to anyone coming within shot, but when outside that distance seem to have nothing to say against being watched and remarked upon. I was introduced to Chakwa and Chakwi in the Santhal Parganas a very short time after I came to India. I was engaged in camping across the district, and, generally riding ahead of my belongings, would arrive at the next camping-ground some hours before they came up. One of these grounds was on, or close to, the sandy bank of a river, and of course the interval between arrival and breakfast was filled up by strolling about.

Two Brahminy Ducks soon attracted my attention, and though I was within about one hundred and fifty yards they took no notice of me, but sat on one leg basking in the sun and now and then uttering a single low conk, not a note of alarm, but one which seemed to me, at the time, to be of overweening pride and misplaced confidence. Later on, I found out where these qualities should have been looked for. I strolled back to

camp, the birds still ejecting their cries at me as I went my way. A gun obtained, I strolled back and was greeted by the birds with the same ejaculation. Then I prepared to stalk, and waiting until the birds were not looking, sank out of sight into some stubble: the Brahminies got up and flew off.

The next pair I came across spotted me just as I got through the first half of a stalk, and the third must have seen me all the time, getting on the wing when I was still twenty or thirty yards too far to shoot.

Hume gives a most excellent example of their fearlessness under what they consider proper circumstances:—

“At Allahabad, at the sacred juncture of the Jumna and the Ganges, I noticed during a great fair, which is held on a spot of sand at whose apex the rivers meet, two pairs of these ducks, placidly performing their own ablutions, just opposite where some 200,000 people, densely packed, were bathing. The hum, the roar, I should say, of the mighty multitude sounded a mile off like the surge of wind and waves in stormy weather on a rock-bound coast. Scores of boats conveying the richer pilgrims to a shallow of special sanctity, a hundred yards below the point, were ceaselessly flying backwards and forwards, crowded and crammed with human beings,—hundreds of gaudy flags were fluttering from the topmost points of gigantic bamboos, planted near the water’s edge,—yet totally regardless of sounds and sights that might have startled the boldest bird, the old Brahminies dawdled about the opposing bank of the Ganges, distant barely five hundred yards from the clamorous struggling rainbow-coloured mass, as though the vagaries were no concern of theirs, and signified no more than a convocation of ants.”

They are very carnivorous, and will take almost anything they can get, including fish, flesh, and all kinds of grain, water-weeds, seed, and growing crops, in which they are sometimes found grazing like geese. There can be little doubt also that they sometimes fall so low as to take to offal.

Their flesh is distinctly bad, on a par with that of the Whistler and the Cotton-Teal at their worst, and little better than that of the White-eye or Shoveller.

The Ruddy Sheldrake, though an emigrant from the plains of India, is yet amongst the few ducks which breed within our limits, as it frequents many of the lofty valleys of the Himalayas for this purpose. It has not been found to breed there below 10,000 feet, and Hume says its nest has been taken as high as 16,000 feet.

In Southern Russia, Asia Minor, and Central Asia, the normal site chosen by this duck is either the deserted burrow of some animal, or a natural crevice or hole in a mountain side or bank, sometimes on level ground. In the Himalayas, the Brahminy breeds, more or less, in company, though the nests may be some distance apart. They are here generally placed in holes or crevices in the high cliffs overhanging streams or lakes, generally close to, but at other times some distance from, them. The nest-holes are often at very great heights from the ground, and as the nestlings have been seen on the water when very young indeed, it follows of necessity that they are taken there by their parents.

The Ladakhis say that they are carried in the feet; and this I think must be the case, though Hume, on the contrary, considers it more likely that they are carried on the backs of the old birds. His argument is that the feet are not adapted to grasping; but if a strong adult bird could not grasp with sufficient strength to hold up a nestling, how could the same nestling have sufficient grasping-power to maintain its position on the old bird's back during flight?

Occasionally they breed in very remarkable situations. Hume says that they "Lay in holes in trees and even fallen logs, and in deserted nests of birds of prey." Tristram found it breeding in a cliff in Northern Galilee amongst Griffon Vultures in May, and in the Eastern Atlas associating with the Raven, the Black Kite, and Egyptian Vulture.

"So too, in Ladakh, its nests have been found associated with one of the Thibetan Raven."

He also quotes Prjevalsky as follows:—"They build in holes and clefts in the ground, and sometimes even in the fireplaces, of the villages deserted by the Moguls, and in the latter places the females, while hatching, get almost black with soot."

Then, again, Messrs. Elwes and Buckley say that in Dobrudscha the bird sometimes lays its eggs in a hole in the centre of a cornfield, where naturally it is not easy to find.

The nest itself seems to be much like that of the Common Sheldrake, a mass of twigs, &c., lined with down; sometimes, however, it is found to consist almost entirely of down and feathers, and altogether it appears to be less bulky, and to have fewer materials other than those just mentioned. Strange to say, I can find no record anywhere of the depth of hole most often resorted to for nesting-purposes, but, from what has been written, it would seem to matter little to the bird how deep or shallow it was, provided the situation proved convenient.

Within our limits, and probably everywhere else also, the birds commence to lay in May, and nestlings just hatched have been seen and procured well on into July in India, Thibet, Ladakh, and even in Southern Russia.

Different writers give the number of eggs laid as varying between six and ten, but eight appears to be the number most frequently laid. Eggs sent to Hume from South Russia are described by him as being moderately broad ovals, slightly pointed at one end. The colour is said to be a creamy or ivory white, and the shells very smooth and comparatively thin.

They vary in length between 2·4 and 2·7 inches, and in breadth from 1·7 to 1·9, but, as he says, a larger series would probably show a wider range of difference.

My eggs agree with the above in every respect.

Genus ANAS.

This genus contains seventeen species, some of which are practically cosmopolitan, and others confined to comparatively small areas. India possesses but three species—*Anas boscas*, *A. pæcilorhyncha*, and *A. zonorhyncha*, the first of which is cosmopolitan, whereas the others belong to the Eastern and South-eastern Asiatic avifauna.

The genus may be recognised by its broad but not spatulate bill, which is about the length of its head; moderate tail, of which the central feathers are not lengthened; its non-chestnut inner secondaries and dark grey coverts.

Key to Species.

- A. No white on outer webs of inner secondaries *A. boscas*.
- B. Outer webs of inner secondaries more or less white.
 - a. Speculum metallic green *A. pæcilorhyncha*.
 - b. Speculum metallic purple *A. zonorhyncha*.

In vol. xvii, p. 558, of the 'Bombay Natural History Journal,' Oates has described as new a duck which he names *Polionetta (Anas) haringtoni*. I have most carefully examined five supposed specimens of this new species and can find absolutely nothing by which they can be distinguished from young birds of *Anas pæcilorhyncha*. One of these specimens comes from China, where it was procured by Reeves. It is, I consider, extremely unlikely that we shall get a new species in the Shan States, where we know that the two forms *pæcilorhyncha* and *zonorhyncha* overlap and quite possibly hybridize.

(22) **ANAS BOSCHAS.**

THE COMMON WILD DUCK OR MALLARD.

Anas boschas, *Jerdon, B. I.* iii, p. 398; *Hume, Nests & Eggs*, p. 642; *id. Str. Feath.* i, p. 261; *Scully, ibid.* iv, p. 199; *Hume, ibid.* viii, p. 119; *id. Cat.* no. 158; *Barnes, B. of Bom.* p. 402.

Anas boschas, *Hume & Mar. Game-B.* iii, p. 151; *Hume, Nests & Eggs* (*Oates ed.*), iii, p. 288; *Salvadori, Cat. B. M.* xxvii, p. 189; *Blanford, B. I.* iv, p. 435; *Oates, Game-B.* ii, p. 257.

Description. **Adult male.**—Head and upper neck bright and very glossy dark green, interrupted on the nape, pure white; upper back and scapulars brownish-grey, changing into dark brown on the back and lower neck; upper back vermiculated with dark brown; rump and upper tail-coverts and four central rectrices deep black; outer rectrices light grey, edged white. Wing-coverts dark grey or grey-brown, the greater coverts tipped black and subtipped white, forming two distinct wing-bars; speculum glossy bluish-purple or violet; after this two or more bars formed by the black subtips and white tips of the outer secondaries; exposed inner secondaries and remaining quills dark brown; upper breast chestnut; lower breast, flanks, and abdomen greyish-white, very finely barred with dark brown; under tail-coverts rich black.

"The colours of the soft parts vary. I have found the legs and feet most commonly reddish-orange, but also coral and vermilion-red, and again pure orange; the claws are black or dusky, and more or less of the webs are often more or less dusky; the irides are brown, sometimes deep, sometimes comparatively light; the nail of the bill is black; the rest of the bill is normally a rather dingy olive, more yellow at base, greener at tip; the lower mandible is generally more or less orange at the base, and I have killed birds (females) with the bills black on the culmen and a considerable portion of the upper mandible and orange-yellow elsewhere; others with brown replacing the black, and brownish-yellow replacing the orange; and I killed one male with the bill a distinct orange-green—a colour such as I never saw in any other bird." (*Hume.*)

"Bill yellowish-green, black at the tip; under mandible reddish-yellow at the base; irides brown; legs and feet reddish-orange." (*Salvadori.*)

"Length 22·3 to 24·5 inches, wing 10·45 to 11·3, tail from vent 4·2 to 8, tarsus 1·6 to 1·85, bill from gape 2·5 to 2·75. Weight if in fair condition 2 lbs. 8 ozs. to 3 lbs., but I have shot them up to 4 lbs." (*Hume.*)

"Total length about 24 inches, wing 10·50 to 11·50, tail 4·4, culmen 2·2, tarsus 1·85." (*Salvadori.*)

Adult male in non-breeding plumage.—Similar to the female, but usually a good deal blacker.

Female.—Chin and throat pale buff; remainder of upper and lower parts

dark brown with buff edges ; on the lower parts the brown centres are reduced to streaks only ; rectrices brown, edged with pale buff ; wings as in the male.

The depth of the brown and its tint vary very much, as does the boldness of the edging. In some birds the centres and edges blend into one another, whilst in others they contrast very distinctly.

Length 20·0 to 21·75 inches, wing 9·2 to 10·8, tail from vent 4·1 to 4·7, tarsus 1·5 to 1·7, bill from gape 2·47 to 2·63. Weight 1 lb. 10 ozs. to 2 lbs. 10 ozs.

“**Young in first plumage** closely resembles adult female, but the male is somewhat darker in colour.” (*Salvadori*.)

“**Young in down** has the upper parts dark brown, with nearly white spots on the wings, scapulars, and sides of the rump ; the underparts are pale brown, palest on the belly, and shading into buff on the throat ; it has a buff stripe over the eye, a dark brown stripe through the eye, and a dark spot at the end of the ear-coverts.” (*Seeböhm*.)

Waterton, as quoted by Hume, describing the change of plumage in the drake into its post-nuptial plumage, says :—“At the close of the breeding-season the drake undergoes a very remarkable change of plumage. About the 24th May the breast and back of the drake exhibit the first appearance of a change of colour. In a few days after this the curled feathers above the tail drop out, and grey feathers begin to appear amongst the lovely green plumage which surrounds the eyes. Every succeeding day now brings marks of rapid change. By the 23rd June scarce one single green feather is to be seen on the head and neck of the bird. By the 6th of July every feather of the former brilliant plumage has disappeared, and the male has received a garb like that of the female, though of a somewhat darker tint. In the early part of August this new plumage begins to drop off gradually ; and by the 10th October the drake will appear again in all its rich magnificence of dress.”

Salvadori thus defines the habitat of the Mallard :—“Northern Hemisphere, rarely north of the Arctic Circle ; in Africa, extending from the Azores, Madeira, and Canaries on the West to Nubia and to Abyssinia (*Rüppell*) on the East ; in Asia, during the winter found from Arabia, through Persia and North India, to China and Japan ; in America, extending southwards to Mexico, the West Indies, and Central America as far as Panama.”

Narrowing ourselves to our Indian limits, we find that *A. boscas* is very common only in the extreme north and north-west ; it is a constant but less numerous visitor to the whole of the North-West Provinces, Punjab, and Oudh ; and south of this is decidedly rare. It has been shot occasionally in Rajputana, and also in the Central Provinces and in Bombay. It is met with at odd times and places throughout Bengal and Assam ; and I have myself shot a pair in Jessore which were in company with a few Gadwall. They were extremely wild, as were all the ducks, and it was

only with considerable difficulty they were approached and shot. It is not very rare in Cachar, and is occasionally to be seen in Sylhet. I shot one out of a small flock in Gowhatty in December 1886, and have had notices of them from Dibrugarh (frequently), Sadya, Tezpur, and Naogaon. From Manipur the only record I have is that of Surgeon-Captain Woods, who writes :—"The Mallard is extremely rare in Manipur ; in fact, during the last seven years I have only seen a pair, and that was this year about the 10th January. These two birds were along with a large flock of teal in a small jheel lying about eight miles due north of Imphal. I tried to secure them, but they were very wild, and flew away at the first shot. I returned to the jheel the next day, but could find no signs of them. I also saw a pair on a small jheel in the Namba forest (Assam)." Lately two notices of its appearance in Burma have been made in the 'Asian.' The notices, though initialled and not signed in full, appear to be authentic. One Mallard is reported as being part of a huge bag of duck and teal obtained near Mandalay.

In Kashmir they are extremely common, as may be seen from the following well-written cutting from the 'Asian' of the 8th February, by the pen of A. E. W. :—"On January the 18th, I was shooting at a marsh near the big reserve, having in front of me about five or six acres of open water, and a smaller amount, about five hundred yards, behind. The reserve was also being shot by four guns, so that the ducks were being continually driven towards me. I knew if I could once get my punts through the ice I should be in for a good thing. For an hour and a half we laboured to get through. By dint of using two heavy poles we reached the place, and then broke up sufficient of the ice to picket out four decoy ducks, two mallards, and five tame ducks, which were accustomed to be shot over. The punt was hidden by some grass, and in it I lay on my back with my shoulders propped up by a large sack of grass ; there was not sufficient cover to enable me to hide if I had sat up, in fact I had to supplement the little there was by some reeds which a fisherman took off his roof and sold to me.

"I could see thousands of ducks in front, on the water, looking like a black mass, whilst the edge of the ice was lined with many more. By the aid of glasses I could make them out to be chiefly Mallards and Red-crested Pochards ; of course those birds which had been behind and tolerably close had cleared off. The second punt was sent back by the way we came, and was then carried round by land to where the open water touched the edge of the marsh. In the middle of the pond in front was a small island ; on

to this a hardy duck shikari managed to get and then lay hid; his orders were to hide, and when the ducks had settled to put them up. In addition to the advantage of my post, I was immediately in the line of flight between the Hokasai and Anchar Lake.

"I had started early; the Hokasai party were to begin at noon, but I had not been long in position before the fun began. Thousands streamed over, and many pitched on my marsh, but as they came to the right I could not do much when reclining on my back; soon they began to fly backwards and forwards over my head, and this they continued to do for hours. I counted over 80 birds down before I sat up to eat my lunch. They were on the ice in every direction; two or three fell so close that I could gather them from the boat, one fell into my cartridge-box. Whilst eating and having a smoke the birds were flying around, but were left to their own ways; and then I lay down again, the ice had thawed in places, and the wounded birds had wandered away. I stopped all I could reach, but that was not many. In the afternoon the Teal began to fly round and looked for open water, but none of the big flights would come near me. Single birds came at short intervals; my cartridges were nearly finished, so I whistled for the men, but they could not hear me; the shooting on Hokasai ceased, and nearly all the ducks left—now and again a Mallard or Gadwall came flying round the decoys, and fell an easy prey to the . . . powder.

"My men did not remember how long it would take to reach me; consequently it was nearly dark before I could begin to move, and then the birds had to be gathered. We collected in all 96, but had to leave many, for they waddled over the ice and got into pools separated from us by thick ice and reeds frozen hard together. Curiously enough not a single Red-crested Pochard came to the gun; but 53 Mallard were amongst the slain, and very grand they looked when put in a line on the deck of the house-boat."

In Sind, in the cold weather of course, the Mallard is found in as great numbers as in Kashmir. Here it is said to collect in flocks of some hundreds; but this is not usual, and all over its vast range it will be found more often in small than in large flocks. About a dozen to some twenty or so is perhaps the number most often seen together in one flock, and over forty or fifty is well above the average, whilst flights numbering a hundred will seldom be seen.

They often, too, are found in pairs, whether in the hot plains of India or in our own cool island. Many, if not most, of us must have, while

wandering about some half-frozen brook or wholly frozen broad, put up a pair of wild duck from some sheltered place beneath a tree or thick cluster of reeds. Generally, even in the depth of winter, they keep to open water, be it a pool ever so small; but they may also be seen disconsolately sitting at the edge of a completely ice-bound pond.

As regards their habits generally, it is impossible to do better than follow Hume and quote what Macgillivray says :—

“Marshy places, the margins of lakes, pools, and rivers, as well as brooks, rills, and ditches, are its principal places of resort at all seasons. It walks with ease, even runs with considerable speed, swims, and on occasion dives, although not in search of food. Seeds of Gramineæ and other plants, fleshy and fibrous roots, worms, mollusca, insects, small reptiles and fishes, are the principal objects of its search. In shallow water it reaches the bottom with its bill, keeping the hind part of the body erect by a continual motion of the feet. On the water it sits rather lightly, with the tail considerably inclined upwards; when searching under the surface it keeps the tail flat on the water, and when paddling at the bottom, with its hind part up, it directs the tail backwards. The male emits a low and rather soft cry between a croak and a murmur, and the female a louder and clearer jabber. Both, on being alarmed, and especially in flying off, quack; but the quack of the female is much the louder. When feeding they are silent, but when satiated they often amuse themselves with various jabberings, swim about, approach each other, move their heads backwards and forwards, ‘duck’ in the water, throwing it up over their backs, shoot along its surface, half flying, half running, and in short are quite playful when in good humour. On being surprised or alarmed when on shore, or on water, they spring up at once with a bound, rise obliquely to a considerable height, and fly off with speed, their hard-quilled wings whistling against the air. When in full flight their velocity is great, being probably a hundred miles an hour. Like other ducks, they impel themselves by quickly repeated flaps without sailings or undulations.”

Probably some of us will not agree with what Hume says regarding the comparative merits of a punt-gun when he declares that “There is more skill, knowledge, and endurance brought into play, and therefore more sport, in one day’s big shooting, than in a week of even such . . . big shooting as Captain Butler describes.” I have had a little experience of both, and must most emphatically dissent. Of course, a punt-gun, especially one of the latest swivel-action, breech-loading, non-recoil guns, will enable a sportsman to bring birds to bag that he could not otherwise

get; but it is not that he uses more skill in approaching, but that there is not the need to get so close. He does not require a more careful aim, for he takes his shot into the brown, nearly always, as they lie on the water. Nor does he require more endurance. To this most people will agree who have stood behind some two hundred shots fired from a 12-bore carrying $3\frac{1}{4}$ drs. of powder. Certainly getting someone to push you along on a punt cannot be said to require more work than does the tramping after your birds on foot.

Mallard especially are strong flyers, and I would personally always feel more satisfaction on hearing the thud, thud, of a brace of birds on the ground in answer to the two barrels of my 12-bore than I would in seeing five, or even ten times that number, left on the water as the result of a lucky shot from a punt-gun.

In shooting wild duck as they rise before one, it is as well to loose off one's piece as soon as possible, for, as Macgillivray says, "they rise straight up in the air, whether flushed from land or water, and whilst thus rising offer what is perhaps the easiest shot, and at the same time they are not increasing their distance."

Mallard have queer fancies, and often resort to places where one would least expect them. I well remember a drake which used to come, year after year, to a tiny pond in a large private garden, where there were few or no weeds on the water, but it was entirely enclosed by trees and in a very deep shade. As soon as the breeding-season was on he used to go off, presumably to carry on his natural duties as a husband and a father, but he never brought back with him either wife or family. There were sometimes tame ducks about the place, but he never seemed to care to associate with them, and kept them always at a respectable distance. What rendered it more curious that he should have chosen such a place was the fact that the garden was in the county of Norfolk, and was surrounded by the famous broads and fens, where he might have obtained the society of any number of his own kind.

Yet another pair used to resort every winter to a small pond joined to a moat which ran round an old monastery. These were never seen on the moat itself, nor on any of the numerous ponds close to it, but when disturbed—they seldom were—used to fly straight away, not to return for some days.

In Indian limits, the Mallard breeds in vast numbers on the Kashmir lakes, and in small numbers on those in Tibet, probably also throughout the Himalayas in suitable places. Hume suggests that it may also be

found to breed on swamps about the foot of these mountains; but I can find no record of their ever having done so.

As far as we know, Kashmir is the breeding-place *par excellence* of our Indian Mallards; here they are found in such great numbers that their eggs form a veritable article of commerce, boatloads at a time being collected on the shores of those lakes which they principally affect for breeding-purposes.

The nest is a massive affair, composed of all and any materials, but principally of grasses, rushes, reeds, and similar articles.

The lining of feathers and down varies very much. I have seen a nest into which one could plunge a hand to the wrist into down and feathers; and, again, I have seen others which had not a handful of these in the whole nest.

The normal position of the nest is on the ground in thick cover: often it is placed in amongst the dense sedges, reeds, and bushes growing at the edge of the water; but at other times it is placed at some distance from the water, and at other times, again, absolutely in the water itself, amongst some thick cluster of reeds or other aquatic plants.

The nest is not always, however, placed on the ground. Here in India the natives say that they sometimes find the eggs in nests on trees; but there seems to be no authentic record of one ever having been so found. In England there are numerous records of such nests, and two have come within my own personal experience. One of these was a huge construction of grass and reeds placed in the head of a polled willow. There was a deep indentation where the nest was placed, and the masses of twigs, then in thick foliage, quite concealed the nest from anyone on the ground. The duck was, however, seen going in, and the nest spotted in consequence. It contained eight eggs, which were, I believe, all hatched and the ducklings reared in safety.

The second nest was quite different. A huge tree (I forget now what it was), which divided into three quite close to the ground, threw out great horizontal limbs over a piece of water which lay still and dark and very deep beneath the shade of this and that of many other trees equally big and densely foliaged. At the end of one of these boughs, and in a most perilous position, on a few small twigs and branches, was the deserted nest of a Magpie. Although knocked out of shape, it still formed a strong platform of sticks and twigs, on which the duck placed a little down and a few feathers and laid her eggs. My brothers and I were small boys at the time, and, of course, with the usual curiosity of small boys, paid constant

visits to the nest, not in the least resented—as far as we could tell—by the duck, which never quitted it or showed any signs of fear at our presence. The drake was far wilder and seldom let us get a view of him. As a rule he was swimming quietly about in the pond below whilst his mate was employed in incubation; but more than once we frightened him from the tree itself, where he must have been perched on one of the big boughs.

The duck, we noticed, always got on one of the big boughs and then fluttered and scrambled awkwardly into the nest. We got one egg out of the water, into which she must have knocked it; but she hatched some of the eggs, and we once or twice got a glimpse of the ducklings on the water.

Another curious nest I took was in Warwickshire, and was originally that of a Coot, of whose eggs two still remained in the nest. It was placed in amongst the roots of a large tree standing at the edge of a large piece of water, and partly in it. It consisted of a huge mass of weeds and grass and was quite invisible from anywhere.

The previous year the Coot had been seen swimming to it, and the year the duck took possession she must have again laid two of her eggs, and then been driven away by the Mallards; these latter had eight eggs, hard-set, but not so much so as the two Coot's eggs, which were on the point of hatching; they were under the duck's eggs and had evidently been laid first.

There are many other instances of Mallards taking other birds' nests, amongst them one in which they seized on the lofty abode of a rook.

In Kashmir it is said to breed sometimes in the rice-fields.

On leaving her nest, the duck is said to frequently cover her eggs with weeds and grasses to screen them from observation. This is, however, probably the exception and not the rule. I have seen eggs so covered, but far more often I have found them without any additional cover at all. If hurried, the bird has not the time, of course, to collect the necessary material, but even when leaving the nest deliberately, and not disturbed in any way, I think she generally leaves her eggs as they lie.

They lay from six to twelve eggs, the natives say sixteen. I have never seen more than eleven, and Hume, who through his collectors must have had records of many hundreds of nests, never knew of more than eleven, so that anything above this number would appear to be abnormal.

In colour, the eggs when first laid are of various tints, ranging from a very pale greyish-green to olive-grey and café-au-lait. As incubation proceeds, the colour continues to deepen, and the green tinge, which is the

most prevalent colour in the fresh egg, is nearly always lost. I had one egg in my collection which was a deep buff colour; it was found in East Prussia, and I cannot say how far advanced incubation was when the egg was taken, but, judging from the size of the blow-hole, the chick could not have been very large.

The texture is very fine, smooth, close, and satiny to the touch, like most duck's eggs. There is a faint gloss, sometimes rather pronounced in the fresh egg, often absent in those near hatching.

They are normally shaped duck's eggs, *i. e.* rather broad regular ovals, sometimes slightly compressed towards the smaller end, sometimes equal at both ends.

My eggs, and those I have records of, all come within Hume's measurements, in length varying between 2.1 and 2.38 inches, and in breadth 1.5 and 1.72.



THE SPOT-BILL OR GREY-DUCK.
Anas peccilorhyncha

(23) ANAS PÆCILORHYNCHA.

THE SPOT-BILL OR GREY-DUCK.

Anas pæcilorhyncha, *Jerdon, B. I.* iii, p. 799; *Hume, Str. Feath.* i, p. 261; *Adam, ibid.* p. 402; *Hume & Davis, ibid.* iv, p. 489; *Hume, ibid.* vii, p. 507; *id. ibid.* viii, p. 115; *id. Cat.* no. 959; *Hume & Mar. Game-B.* iii, p. 168; *Legge, B. of Cey.* p. 1073; *Oates, B. of Brit. Burm.* ii, p. 283; *Barnes, B. of Bom.* p. 403; *Hume, Nests & Eggs (Oates ed.)*, iii, p. 289; *Salvadori, Cat. B. M.* xxvii, p. 209; *Blanford, Fauna B. I.* iv, p. 436.

Polionetta pæcilorhyncha, *Oates, Game-B.* ii, p. 150.

Description. Adult male.—Crown from forehead to nape dark brown, a streak of the same colour covering the lores and running through the eye to the back of the ear; coverts the same colour; remainder of head and neck buff-white, more or less centred dusky, with the exception of the chin and throat; upper parts brown to brownish-black; the scapulars paler and edged with pale brown, as are some of the feathers of the back; rump and upper tail-coverts deeper brown still; tail the same but darker and more glossy, the feathers edged pale; lesser and median wing-coverts grey, the greater ones dark grey, subtipped with white and tipped black; speculum glossy green, bordered on either side with black; secondaries tipped white, and inner secondaries with the outer webs more or less broadly white, remainder of wings brown; upper breast fulvous-white, the feathers spotted with brown; abdomen yet darker and browner, and the under tail-coverts almost black. "Speculum . . . a rich emerald-green in most lights, a lovely rich blue or purple in others" (*Hume*). The amount of white on the inner secondaries varies a good deal and the depth of coloration on the lower surface, which is sometimes nearly white on the breast, whilst at other times the whole of the lower parts are nearly unicoloured. The spots seem to increase in size with age.

Legs and feet deep coral-red; claws black; irides light to dark brown; bill black, terminal one-third or less of the bill varying from yellow to reddish-yellow or orange; a spot at the base of the bill on either side next the forehead orange-red to deep coral-red; lower mandible black-tipped, the same as the maxilla.

"Length 23·8 to 25·9 inches, wing 10·6 to 11·2, tail from vent 4·7 to 5·8, tarsus 1·84 to 1·93, bill from gape 2·4 to 2·75. Weight 2 lbs. 4 ozs. to 3 lbs. 5 ozs. (*Hume*.)

Female adult.—Similar to the male, but smaller and perhaps rather paler in coloration.

Legs and feet duller red than in the male, as also are the spots on the bill. "Wing about 10 inches" (*Salvadori*).

"Length 22·0 to 24·0 inches, wing 8·9 to 10·7, tail from vent 4·9 to 5·3, tarsus 1·7 to 1·9, bill from gape 2·3 to 2·5. Weight 1 lb. 14 ozs. to 2 lbs. 12 ozs." (*Hume.*)

Young resemble the adults, but have no red spots at the base of the bill and have the feet coloured orange to brick-red. The general plumage is lighter, the spots fewer in number and less in size, the breast being spotted white.

There appears to be no record of any post-nuptial change in the plumage of the drake of this species, and enquiries made on this subject elicit no evidence to show that there is such a change.

Blanford (*in loc. cit.*) shows that the male has 20 rectrices, whereas the female has but 18. This is very remarkable, and it is to be hoped that other observers will note the number of rectrices in both male and female, so as to ascertain whether the difference is constant.

The Spotted-billed Duck is found practically throughout the Indian Empire on the mainland ; but it is absent from Southern Burmah. It does not seem to have been recorded from South Konkan ; but as it occurs in Ceylon it would naturally be almost sure to appear more or less frequently in the South Konkan also. I have a record of this duck from Tenasserim, but I am not sure that the identification was correct, and confirmation of its occurrence there is still required. Outside India it has been found in the Shan States, and might possibly, though not probably, straggle into China. In the British Museum (Natural History) there is a specimen said to have been collected by Mr. J. R. Reeves in China ; but I see Salvadori considers the locality doubtful.

Like all our local ducks, though not strictly migratory in the true sense of the word, yet they wander about a good deal under the influence of the seasons and want or otherwise of water. Thus, in the drier portions of its habitat it is a rainy-weather visitant, appearing only when the jheels and ponds contain sufficient water to satisfy its wants. In certain parts also, quite independently of the water-supply, this duck is much more common than in others ; thus, all round the 24-Parganas, Nadia, Khulna, Jessore, and the Sunderbunds generally it is decidedly rare, but gets more common as one works further north or west. It is even more rare in the extreme north and north-east, but common all over Central India, getting more rare again towards the south. In Ceylon itself it does not seem at all rare, for though Legge never met with it, he writes of others having done so not infrequently. He seems, however, to believe it to be only a winter visitant, but it will very likely eventually be found to be resident.

In Manipur it is very common. Major Woods says (*in epistolá*) :

“This (the Spotted-billed Duck) is a very common duck in Manipur, though in the rains and in the nesting-season, owing to the dense grassy jheels to which it resorts, it is seldom seen.”

Hume seems to think that it never ascends the hills to any height; but it is found in Manipur up to 3000 feet. Major Woods records it from the Tankul Hills at heights over 3000 feet. I have seen it in the Cachar Hills in valleys up to about the same height; and it has been recorded from the Darjeeling Terai up to about 4000 feet.

The Spotted-billed Duck is not a sociable bird, either with its own kind or with other species of duck; often it is found singly or in pairs, and the flocks seldom number much over a dozen, though in rare instances they run up to as much as forty. Indeed, Major McInroy, as quoted by Hume, had frequently observed flocks of at least a hundred, and these he had seen both on the wing and at rest.

If they ever have to associate with other ducks, Hume says that they give the preference to Teal or Shovellers; and Woods writes to me: “I have often seen an old solitary Spot-bill piloting a flock of Teal across a jheel and jungle.” In such cases the Spot-bill may have had the company of Teal thrust upon him whether he desired it or not.

Their haunts seem to vary very much; probably they prefer tanks, jheels, and small pieces of water which are well covered with weeds, and they seldom resort to large open pieces of water. Thus, in Manipur, I am told the Spot-bills do not, as a rule, frequent any of the larger, clearer sheets of water, and that on the Lagtak it is quite a rare duck when compared with the others which are found on that lake. They inhabit the smaller jheels, which are surrounded near the margin by jungle, and here they may be seen all asleep, except one or two which are on sentry-duty near the edge. In the district of Mymensingh, however, they are found in the vast bheels which stretch for miles in every direction, and here also they breed in great numbers.

They are also found, though I think but rarely, on small quickly flowing streams in forest. On the other hand, on some of the bigger rivers they are not uncommon. Hume has “shot them several times both on the Ganges and Jumna (on both of which, however, they are rare), while on the Jhelum, Chenab, and Indus they are quite common.” Woods has “shot numbers of them on the banks of the Irrawaddy close to Sagaing.” They are found, though not frequently, on the Brahmapootra, but they have been reported to me as being common on that river on the part which runs through Sadiya. I have no record of their occurrence on the Megna,

Surma, Barak, or any other of this network of rivers, though it is probable in the extreme that they may be met with here and there on any of them.

It appears to be entirely a freshwater duck, and this would be sufficient to account for its comparative absence from the Sunderbunds and their tidal and brackish waters. Whether it occurs on the Chilka Lake—also of brackish water—I cannot say.

The Spot-bill is, in every sense of the word, one of the finest and most game of our ducks. Even larger on an average than the Mallard, it fully rivals that bird for the table, and is, I think, more uniform in its good condition; this no doubt is due to the fact that it has not to overtax its strength in long migrations. It is a strong flyer, though less quick in rising and not so speedy in getting under way as is the Mallard. When it just rises, Hume compares it to an old hen, such a noise and flurry does it make, but the pace it puts on once it is fairly started compensates for its slowness at first. It is perhaps an easier bird than most of its size and weight to bring down when hit, owing to its plumage being rather less dense than that of many other ducks. Even when brought down, however, it is not necessarily brought to bag at once, as it is a most expert diver, and is one of those ducks which dive and grasp the weeds under the water, and so keep hidden below the surface; more often, though, they rise, but only high enough to allow of the tip of the bill protruding. Hume, Butler, and others have recovered birds quite dead, drowned through holding on to the weeds a little too long below the water. If winged, so as to render diving either painful or impossible (a twisted wing prevents most ducks from diving), it will make for the nearest cover; indeed Woods informs me that he has found that the majority of those he has wounded without killing outright have taken this means of trying to avoid capture; at the same time, he adds that they both dive and swim well.

Most writers agree that the voice of the Spot-bill and of the Mallard are very much alike; but Hume considers that the quack of the former is the more sonorous. I cannot say that I have noticed any difference between the two.

They are not shy birds, and until they have been much shot at can generally be approached near enough for a shot fairly easily.

They are principally vegetable-feeders, and do a good deal of damage to rice, both when young and when in the ear, trampling down a great deal more than they eat; they also, at times, eat all sorts of miscellaneous food, such as water-mollusca, frogs, worms, insects, &c. Woods observes that the places where they feed can generally be detected at a

glance from the state of the much-trampled blades of rice and the numerous feathers lying about. He says that he has had good sport by concealing himself in such places on bright moonlight nights, and shooting the birds as they fly over. He has also been successful in getting capital sport with them over a decoy. The Musalman Manipuris catch numbers of the flappers with spears and nets ; and they sometimes form part of the bag when the natives in other parts of India have a duck-drive into nets.

In Southern India (Mysore ?) Mr. Theobald says that the shikaris get within easy shot of these ducks by making bundles of rushes and weeds, and pushing these along the surface of the water in front of them, the bundles affording a floating rest for their guns and also concealing the approach of the shooter.

Hume says : "The breeding-season varies a great deal with the locality. In the North-West Provinces, Oudh, and the Eastern portions of Rajputana and the Punjab, it only breeds, so far as I yet know, once a year, laying during the latter half of July, August, and the first half of September. In Sind it lays in April and May, and again in September and October. In Guzerat it certainly lays in October and in Mysore in November and December, though whether in these two last-named provinces it has also a second brood I have not yet ascertained."

In Bengal I think it lays principally in July and August ; but a few birds are earlier, and these may have a second brood, for nests have been taken as late as October. On the huge bheels extending over the whole of the north of Mymensingh and Sylhet these birds have been seen accompanied by their young in April, and again their eggs have been taken in August.

As a rule, the nest is rather a compact, well-made structure, of a broad, rather irregular cup-shape, made principally of grasses, rushes, and weeds, and lined—in almost all cases—with down taken from the breasts of the ducks themselves. Sometimes there is no down at all, as in the nests taken by Captain Butler at Langrai between Deesa and Ahmedabad.

Captain G. F. L. Marshall gives the dimensions of a nest taken by him as follows : "About 9 inches across, 3 deep, and the sides fully 2 thick." This is perhaps a trifle smaller than the average nest, as the size depends so much on the compactness with which it is built.

Major Woods, I.M.S., sends me very interesting notes from Manipur on the breeding of this duck. He writes :—"Here the birds generally pair about the beginning of April ; but I have found a nest in a flooded

dhân khet as late as October. The nests are composed of grass and feathers, the latter of which the parent birds pluck from their own breasts.

“I have found as many as 14 eggs in a nest, though the usual number is 10. The parent bird sits very close when incubating, and when alarmed feigns injury to a wing, as do others of the family.

“Towards the end of the rains both old and young birds frequent more open water and the flooded rice-fields. A place called the Kurram Path, about 18 miles from Imphal, is a favourite breeding-ground, and towards the end of the rains the ducks may there be seen in hundreds with flappers in every stage of development.”

In another letter he remarks on the curious fact that though the normal number of eggs laid is about 10, yet one never sees a family-party containing more than six or seven young ones, so that the percentage of addled eggs or of accidents to the young after birth must be very great.

Mr. Doig found on one occasion that otters had been responsible for the destruction of a nest of eggs. He found a nest at Narra in Sind, on the 1st May, which had contained 10 incubated eggs, but these, with the exception of one, were all scattered about and broken. Before reaching the island on which the nest was placed he had noticed a family of otters playing about, which all bolted at his approach, and which were doubtless the culprits concerned in the pillage of the nest.

The greater number of nests are placed on the ground, well concealed in rushes and grass, often at the edge of some piece of water or stream, frequently on islands, and not seldom in patches of grass well away from water. The ridges between rice-fields seem to be favourite places for them to make their nests upon, the proximity of the food-supply doubtless being the incentive to the birds to make use of such spots.

Hume thus describes the first nest taken by him :—“It was placed on a drooping branch of a tree which hung down from the canal bank into a thick clump of rushes growing in a jheel that near the bridge fringes the canal. The nest was about 9 inches above the surface of the water, and was firmly based on a horizontal bifurcation of the bough. It was composed of dry rush and had a good deep hollow in which down, feathers, and fine grass were intermingled. The nest was at least a foot in diameter, perhaps more, and I suppose 2 inches thick in the centre and 4 at the sides. It contained three fresh eggs.”

The number of eggs laid seems to vary considerably ; but from about 8 to 10 may be considered as the normal number laid, often less, but

not often more, though they may occasionally number 14. They are much like the eggs of the Mallard in appearance, though rather broader on an average, as well as a little shorter. Hume's dimensions for the eggs of this duck are : Length from 2·08 to 2·3 inches, breadth 1·65 to 1·18, and the average of fifteen $2·15 \times 1·70$.

The eggs in my collection are of two rather distinct types—the one a broad regular oval, the other a narrower egg with one end very much smaller than the other and distinctly pointed. The texture is the same in both kinds and the colour also, generally a pale buff-drab, much stained as incubation progresses. The two types average respectively $2·05 \times 1·62$ inches and $2·18 \times 1·60$.

They do fairly well in captivity, but are difficult to tame, and generally clear off as soon as they can fly. They have been known to breed in confinement : those in the Calcutta Zoological Gardens did so in 1885. They will also interbreed with the domestic duck ; and there is a specimen in the British Museum collection of a hybrid between *A. pæcilorhyncha* and *A. boscas*.

The birds are very good parents ; the duck sits close and both she and the drake show the greatest consternation when their nests are discovered. Sometimes the disturber of their peace is tempted away from the vicinity of the nest by the duck pretending to be wounded, and fluttering about a short distance ahead, leading him to believe capture to be an easy matter, until the capture is really attempted. Sometimes the birds wheel round and round in the air just above the nest and refuse to leave, even after its contents have been rifled.

They also show great affection to one another, and one of a pair killed, the remaining one has been known to refuse to leave the spot until he—or she, as the case may be—has fallen a victim to its constancy.

(24) **ANAS ZONORHYNCHA.**

THE EASTERN GREY-DUCK.

Anas zonorhyncha, *Salvadori, Cat. B. M.* xxvii, p. 211; 'Asian,' Jan. 10th, 1899; *Stuart Baker, Jour. B. N. H. S.* xvi, p. 12; *Oates, Game-B.* ii, p. 148.

Description.—The Eastern form of the Grey-Duck differs from the Indian Spot-bill in not having at any period of its life the two red spots at the base of the upper mandible, and in having the speculum blue and not green as it is in that bird. Also the outer secondaries have far less white upon them—indeed, in some birds this is almost absent. The following differences are also noticeable in comparing series of the two ducks:—In the Eastern form the chin, throat, and fore-neck are conspicuously white, and contrast strongly with the rest of the underparts, which are far darker than in the Western bird. In both, the under tail-coverts are very dark brown, but whereas in *zonorhyncha* these are almost concolorous with the feathers of the vent and lower abdomen, in *pæcilorhyncha* the abdomen is much lighter and contrasts distinctly. In the latter the underparts are generally very much spotted, increasing with age, in the former spots are nearly or quite obsolete. In the Eastern Grey-Duck the white of the supercilium is also much purer and better defined than in the Western Grey-Duck. The soft parts, with the exception of there being no spots at the base of the bill, are the same as in the other Grey-Duck.

The bill probably averages smaller. In the series of *pæcilorhyncha* in the British Museum there are females with bills up to 2·20 inches, and males up to 2·38 straight along the culmen from tip to feathering on the forehead.

The largest male of *zonorhyncha* has the bill only 2·30 inches, and the next biggest bird, unsexed, has it 2·25. The largest sexed female has it 1·98.

During the examination of the Grey-Duck in the British Museum, I have tried to ascertain whether there are any grounds for creating a new species for the ducks sent home by Captain Harington. I can find none! There are four specimens of *pæcilorhyncha* from the Shan States, got by Rippon and Oates, and one from China by Reeves; these are all, as far as I can see, typical young birds of the Indian Spot-bill. They are less spotted below than the adult birds, as one would expect, and have no spots also at the base of the bill. The two species overlap one another throughout the territory Oates presumes his new species inhabits, and hybrid specimens are likely to occur, although I have received none such as yet.

Salvadori defines the distribution of the Eastern Grey-Duck thus: "China, Mongolia, and Eastern Siberia; Japan and Kuriles." We have it

recorded from Kengtung in the Shan States, and shall probably find that it is common throughout the Shan States, and indeed Northern Burmah everywhere, as it is now known to be more or less common as far west as Dibrugarh, where, however, Cripps also got *paecilorhyncha*.

The first to obtain this bird in our limits was the correspondent of the 'Asian' at Kengtung on the 10th Jan., 1899. In 1902, Messrs. Moore and Mundy got several specimens in Dibrugarh, and each succeeding year up to 1905 got others. I obtained my first specimens in 1903, and got a good many more in 1904 and 1905.

On one occasion only did any of us see the bird in any numbers, and on this Mr. Moore came across a flock of about forty at a small collection of shallow swamps on the road to Dimaji in Lakhimpur. He obtained two or three specimens and on his return to Dibrugarh told me of the flock, and when I went out some ten days later the flock was still there, and I got a pair in the first drive. They refused to leave the swamps round about, but after the first two shots had been fired it was impossible to get near them or to get them within shooting-distance of our mychans.

As a rule, we found the birds either singly or in pairs, less often in small flocks of four or five birds, but in the former case they were always in company with Teal, Gadwall, or other ducks of some kind. They were just as wild as all the other ducks in this district, and the only way we could get them was by driving; no amount of artifice or care could get one within decent shooting otherwise. We had small and extremely dicky mychans, or platforms, made in different places in the huge bheels; these were well concealed by reeds and water-weeds, and we got into them with as little noise as possible, and then sent boats all round about to put up the birds. The local people knew the habits of the duck well, and generally managed to arrange the hiding-places so that they were in the line of flight most often taken by the birds, and we got a great deal of very pretty shooting in this way, though our bags were not heavy. Still we often managed to pick up thirty or forty birds, losing sometimes as many more in the impenetrable cane brakes, and by winged birds diving and so escaping or being carried off by the many Eagles which infest these waters. We could, of course, see all round us by peering through the reeds, but there were four sides to watch on; and often as we watched a flock coming up in front of us, a second would come up from the opposite direction, and the first we would know of it would be the sound of their wings as they hurtled through the air high overhead. Sometimes too, as we watched, a flight of Teal would rush by only a foot or two above the

water, almost passing out of fire before being spotted. Consequently the shooting was not all it might have been as regards hitting, and it required a rare good man behind the gun for cartridges to average not more than two per head of game.

The Eastern Grey-Duck is of course resident where found and breeds throughout its range. I took its eggs, three fresh, in Dibrugarh, and Harington took a hard-set clutch of eggs in the Shan States. I have also eggs taken as far east as Japan.

The eggs differ in no way from those of the Spot-bill, but average smaller.





FK

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THE BRONZE-CAPPED TEAL.
Eunetta falcata.

J. Green, Chromo.

Genus EUNETTA.

The genus *Eunetta* may be at once distinguished from *Anas* by the sickle-shaped inner secondaries in the male, and by the remarkable length of both upper and lower tail-coverts, which extend beyond the rectrices.

From *Chaulelasmus*, *Eunetta* may also be distinguished by the number of rectrices, which is 16 in the former and only 14 in the latter. The females, however, of *C. streperus* and *E. falcata* are so much alike that their differences are given in full below. There is only one species in this genus, *E. falcata*, which occurs throughout Eastern Asia.

(25) EUNETTA FALCATA.

THE BRONZE-CAPPED TEAL.

Anas falcata, *McLeod, Str. Feath.* x, p. 168.

Querquedula falcata, *Hume, Str. Feath.* iv, p. 225; *id. ibid.* vii, p. 494; *id. ibid.* viii, p. 115; *id. Cat.* no. 966 bis; *Hume & Mar. Game-B.* iii, p. 231; *Reid, Str. Feath.* x, p. 84.

Eunetta falcata, *Salvadori, Cat. B. M.* xxvii, p. 218; *Blanford, Fauna B. I.* iv, p. 438; *Oates, Game-B.* ii, p. 202; *Inglis, Jour. B. N. H. S.* xiii, p. 180; *id. ibid.* p. 378; *Comber, ibid.* xiv, p. 149; *Stuart Baker, ibid.* xv, p. 141; *Hopwood, ibid.* xvi, p. 249; *Inglis, ibid.* xvii, p. 1015.

Description. **Adult male.**—"Crown deep chestnut; sides of the head bronze-purple, greener posteriorly; a long green mane on the back of the nape; throat and upper part of the neck white, intersected below by a green collar; mantle and upper scapulars with narrow crescentic bands grey and blackish; rump blackish; basal upper tail-coverts green, vermiculated with black, the longer ones black and entirely hiding the tail; upper breast waved with alternate crescentic bars of black and white, producing a regular scaly appearance; lower breast whitish, each feather with black bars, one of which is subterminal; sides, flanks, and abdomen waved with narrow black and greyish bands; under tail-coverts black, very long, and reaching beyond the tail; on each side of the under tail-coverts a very distinct buff patch, the bases of the feathers being black, showing a beautiful black bar, which separates a buffy patch from another silky white band formed by the tip of the lowest flank-feathers; scapulars grey, narrowly waved with black, and more or less distinctly whitish on the edges; a black patch on the outer

scapulars; wing-coverts grey, the last row whitish; wing-speculum on the secondaries dark glossy green, bounded below by a narrow whitish band at the tip of the secondaries; tertials very long and narrow, sickle-shaped, with the shafts whitish, the webs velvety glossy black, the edges and part of the inner webs grey; quills dark grey, almost blackish towards the tip; under wing-coverts white, but the greater ones grey; axillaries white; tail-feathers grey, with narrow white edges; bill greenish-black; feet dull blue-grey, darker on the web; iris brown. Total length 19 inches, wing 10, tail 3, culmen 1·8, tarsus 1·35." (*Salvadori*.)

"Of another Indian-killed male the wing also measures 9·5 inches" (*Hume & Marshall*). "Bill from gape 2·1 inches" (*Blanford*).

"Irides deep brown; bill perfectly black; legs and feet drab with an olive tinge; the webs, except immediately alongside the toes (where they are unicolorous with these), and claws dusky black. A frontal spot ending in a point on the culmen, about 0·4 inch long and 0·3 wide, pure white." (*Hume & Marshall*.)

Female.—"Head and neck brown streaked with whitish, much paler beneath; back and scapulars brown, with concentric pale rufous bands; lower back and rump blackish; upper tail-coverts brown, with concentric pale bands; tail-feathers brown; quills brown; speculum black, slightly glossed with green; wing-coverts greyish-brown, with pale edges, especially the greater coverts; upper breast and sides dull rufous, with concentric brown bars; abdomen whitish, with a few bars or spots; under tail-coverts rufescent, with brown marks." (*Blanford*.)

"Bill, feet, and irides as in the male" (*Salvadori*).

"Wing 9·85 to 10·06 inches, tail 3·23 to 3·57, bill at front 1·75 to 1·84, tarsus 1·40 to 1·62" (*Schrenk*). "Length 16·0 inches, wing 9·0, tail 3·4, tarsus 1·2" (*Dresser*).

The strict habitat of this little duck is Eastern Asia, whence it ranges occasionally west, sometimes entering Eastern Europe. It breeds throughout Eastern Siberia, and lately I have received notes of its breeding from Manchuria. In the winter it descends south, and is common in China and Japan, and of very rare occurrence within our limits. Seebohm says ('Birds of the Japanese Empire'): "The Falcated Teal is a winter visitor to all the Japanese islands. The Perry Expedition found it to be one of the most abundant of the water-birds of Japan, and noticed it at various points during the voyage." In India, until quite recently, few specimens have been obtained since Hume's time, more probably owing to no notice being taken of them than for any other reason, although their occurrence is of course very rare. Hume notes five specimens which came into his possession: of these, two were caught by fowlers near Lucknow, and given to him by Dr. Bonavia; Major C. H. T. Marshall shot a male at Kurnal, 70 miles north of Delhi, in February; another was shot in the same month about 30 miles from Delhi, by Mr. W. M. Chill; and the fifth was obtained by Hume himself in the Calcutta bazaar, and this he says was caught in the immediate vicinity.

Shortly after this, General McLeod recorded that he had shot a female at Feroza, Bhawalpur, in December 1879 ; and G. Reid, in the same volume of 'Stray Feathers' as that in which this record is made, states : "Two years ago, I myself saw two or three in possession of a native fowler, who would not part with them, except at a fancy price, saying he meant to take them with a lot of others he had to the ex-King of Oudh, who would pay him handsomely." He does not say whether the "lot of others" were of the same species, presumably not.

Two young males, one without the sickle-shaped secondaries and one with these fully developed, were obtained by Mr. Finn in the Calcutta bazaar ; a specimen has been shot in Purneah ; two specimens—an adult male and a young bird of the same sex—are in the Lucknow Museum, and were, I believe, obtained near that place. Besides these, one was obtained in Upper Burma, near Bhamo, in 1903, and a second by Hopwood at Kindat in March 1906 ; these are the only ones I can find recorded from Burma except Anderson's. Major Cowley, of the 43rd Gurkha Regiment, obtained one in Manipur, and, as far as I can ascertain, this is the only one ever seen in that State. In Tirhoot, Mr. Inglis has obtained no less than eight specimens ; and its western limits have lately been added to by Mr. L. Robertson, who obtained an adult male of this species in the Narra Valley, Sind.

In addition to those recorded above, the only other specimen I have ever heard of was one, a young male, shot by my father, Mr. E. B. Baker, in Jessore, and several shot by Messrs. Moore, Mundy, and myself in Assam.

There is no reason, however, that sportsmen in Upper Burma should not meet with this bird more often than would seem to have been the case hitherto, for N.E. Burma is well within range of its annual migrations, and doubtless when men wake up to the fact that records of rare ducks are still desirable, we shall have a good many from that quarter.

Anderson obtained specimens on the Taipeng River, in Upper Burma ; but I cannot ascertain how many he got.

The Bronze-capped Teal, when found within our limits, appears always singly or in pairs, perhaps very rarely in small parties. In places where it is more numerous it collects in flocks, as a rule rather small, consisting of about twenty or thirty individuals, but at other times in very large flocks ; and they are said to arrive at the borders of their breeding-grounds in immense flights. It has the reputation of being a very sociable, if not a highly gregarious bird, and their small flocks frequently, indeed generally,

seem to mix much with larger flocks of other species of Teal and Duck, with whom they feed and sleep in perfect harmony.

The flight is said to be swift and Teal-like, and the bird to be very strong and active on the wing. I can find no record concerning these birds' swimming and diving powers, so that we may expect to find that these are neither abnormally developed nor yet much less in extent than they are in other Teal.

Its cry, when on the wing, is noted as a "tolerably loud and piercing whistle" (Prjevalski); and it has also been heard to give vent to a chuckling quack as it swims about feeding.

Its diet seems to be principally, if not wholly, vegetarian, but very little has been written on this point.

The female Bronze-capped Teal is so like the female Gadwall that both Hume and Salvadori give the points by which they may be determined. They are these :—

The principal difference lies in the wing-speculum : in the Gadwall "the entire visible portions of the later secondaries are pure white, the terminal portions of their larger coverts white.

"In female *falcata* the visible portions of the later secondaries are black, with more or less metallic-green reflections, narrowly tipped with white, and the terminal portions of their greater coverts are black."

The maxilla also of the Gadwall is only dark along the culmen, whereas the whole of the upper mandible of the Bronze-cap is dark : so also there is always more or less of an orange or yellowish tinge on the feet and legs of the Gadwall, whereas there is no trace of this colour on those of the other duck, in which they are more or less of a light slate-colour. These last differences, however, will not be very noticeable in the dried skin, not at all in very old specimens, and can only be of any use in discriminating birds in the flesh. It should always be borne in mind by anyone wishing to ascertain the identity of a bird that it is infinitely easier to do so whilst it is in the flesh than afterwards, when it has become a dried specimen : the colours of the soft parts are then undiscernible, small marks of feathers, such as rings round the eyes, indistinct supercilia, and similar markings, are seldom as definite as in the fresh bird, and often, if roughly handled in the skinning, become totally lost. Thus the bird should be identified in the flesh as soon as possible ; and if it cannot be, the colours of the soft parts must be carefully noted, and a rough note made also of anything remarkable in the coloration.

The Bronze-capped Teal breeds throughout Southern Siberia to the east centre, but rarely to the west ; it has been found breeding on all four

shores of Lake Baikal, but even there more plentifully to the east and south ; it breeds also on the Amur, and probably a good deal further north. Middendorff says that it "breeds plentifully in the Stanaway Mountains, and nearly to the tops of the ranges," and, as Hume points out, if it selects sites at as high an altitude as this, it is sure to extend considerably further north in the plains.

In Manchuria, where my informant took several nests, they are said to make them on low-lying parts, along the banks of the larger rivers, which are more or less in the condition of swamps. The nest appears to be a rather well-built affair of rushes and reeds, rather more compactly put together than are most ducks' nests, and lined very plentifully with down, presumably taken from the breasts of the parent birds themselves. So thick is this down that in some of the nests, the cups of which were in some cases as much as six inches deep, it filled them completely to the top, hiding the eggs which were inside. The nests were placed in thick tufts of grass, beds of sedges, or, more rarely, under and amongst bushes ; they were not very carefully hidden, and, but for the treacherous nature of the ground in which they were found, not particularly hard to get.

The duck is a close sitter, and is assisted in the duty of incubation, at least occasionally, by the drake, which is seldom found far from the nest. They lay from six to nine eggs, beginning to lay in the end of May, and continuing through June and the early part of July.

The eggs are said to be like those of the Common Teal, but whiter and a great deal larger.

Dybowski (*vide* Hume) says that in Western Dauria and the country to the south of Lake Baikal "the Crested Teal arrives in great numbers during the later half of April, but in the Darsun region it is more common.

"The female makes her nest among the bushes of swamps, collecting dry reeds and grass, and lining it thickly with down. At the beginning of June she lays eight eggs, sits closely, and only rises at your feet.

"They remain in autumn as late as the 27th December."

Taczanowski in describing the eggs taken by the above naturalist writes : "The eggs are decidedly smaller than those of the Mallard, and in colour resemble those of the Gadwall, though the yellow tinge is somewhat more pronounced. They vary from 2.1 to 2.3 inches in length and from 1.52 to nearly 1.7 in breadth."

Dresser, quoting Hume and Marshall, describes the eggs as being of a creamy-white colour, like the eggs of a Common Wigeon, and of a very smooth texture.

Genus CHAULELASMUS.

This genus is remarkably close to *Anas*, and might almost more conveniently come between *Anas* and *Eunetta* rather than between *Eunetta* and *Mareca* or *Nettion*. It differs from *Anas* in having the bill proportionately rather shorter and smaller, from *Eunetta* in not having the long inner secondaries sickle-shaped, and from *Mareca* and *Nettion* in having the lamellæ of the maxilla or upper mandible very prominent; it is also of course, as far as the Indian species is concerned, a bigger bird than any species of the two last-mentioned genera.

There are only two species of the present genus—our bird, the Gadwall, and *Chaulelasmus couesi*, a smaller bird, confined to the Washington and New York Islands and the Fanning groups, a bird of which very little is yet known.

(26) CHAULELASMUS STREPERUS.

THE GADWALL.

Chaulelasmus streperus, *Jerdon*, *B. I.* iii, p. 802; *Hume*, *Str. Feath.* vii, p. 115; *id.* *Cat.* no. 961; *Scully*, *Str. Feath.* viii, p. 362; *Hume & Mar.* *Game-B.* iii, p. 181; *Oates*, *Birds of Brit. Burm.* ii, p. 283; *Barnes*, *B. of Bom.* p. 405; *Salvadori*, *Cat. B. M.* xxvii, p. 221; *Blanford*, *Fauna B. I.* iv, p. 440; *Oates*, *Game-B.* ii, p. 234; *Dewar*, *Jour. B. N. H. S.* xvi, p. 498.

Description. **Adult male.**—Head and neck whitish, rufous-white, or dull rufous, densely speckled with brown, except on the chin, which is almost pure white in highly plumaged birds; the anterior portions of the head nearly always lighter than the posterior in ground-colour, which shades off into brown of the nape, on which the darker spots hardly show; lower neck, back, and scapulars deep blackish-brown to dark rufous-brown, every feather beautifully waved with white crescentic lines; lower back darker, with fewer and finer vermiculations, sometimes almost unmarked, changing into the black of the rump and upper tail-coverts; central rectrices grey, outer ones rufous-grey with almost white edges, generally increasing in width to the outermost ones; breast, sides of the body, and flanks like the back, but the breast more boldly marked with the dark and light, and the vent and flanks more finely so; rest of the abdomen, &c., white; under tail-coverts typically the same velvety black as the upper, but often splashed with patches of black and white vermiculations; the smallest wing-coverts like the scapulars; the median and primary greater coverts chestnut, with the bases brown and white, sometimes showing; greater coverts next the



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THE GADWALL.
Chaulelasmus streperus.

J. E. Lodge

secondaries black; secondaries pure grey, silvery towards the tips; a speculum formed by the outer secondaries, four or five glossy velvety black and three with broad pure white outer webs, those next the black often with a narrow black edge; primaries brown-grey, darkest at the tips; shoulder of wing and under wing-coverts white.

The colours, as with nearly all ducks, vary considerably; the abdomen is sometimes as pure white as freshly fallen snow, often tinged with rufous and sometimes wholly of that colour. In the same way the colours of the head vary much also. I have a fine drake before me now in which the rufous head contrasts strongly with the blacker breast; and again another drake in which the two colours blend with one another.

Maxilla dark slaty brown, black or brown; mandible paler and yellowish or reddish on the gonys and tip; irides dark brown; legs yellow, brownish-yellow to dull orange; claws almost black.

"Legs and toes orange-red, less bright after the summer moult; claws black; webs dusky orange-red." (*Hume*.)

Length 19·5 to 21·5 inches, wing 10·5 to 11·75, tail 3·4 to 4·3, tarsus about 1·5, bill at front 1·90 to 2·00 and from gape 2·05 to 2·25. Weight 1 lb. 7 ozs. to 2 lb. 4 ozs.

Female.—General colour above brown, the feathers with buff or rufous margins, and the head and neck more or less spotted and streaked on a light ground; the scapulars unmarked dark brown; rump and upper tail-coverts brownish black; wings as in the male, but the chestnut, if not altogether absent, is present only on the outer webs of some of the median coverts; below the breast and sides are pale rufous, sometimes rather darker, spotted with brown; under tail-coverts and feathers about vent the same; remainder of lower parts white, more or less tinged with rufous.

Irides and legs the same as in the male; bill dull orange to yellowish-brown, the culmen and tip brown. Length about 18 to 20·1 inches, wing 9 to 10 (10·2, *Hume*), tail 3·0 to 4·0 (3·7 to 4·5, *Hume*), tarsus 1·37 to 1·42, bill at front 1·8 to 1·95 and from gape 1·95 to 2·15. Weight about 1 lb. to 1¾ lb.

Young in first plumage.—"Closely resembles the adult female, but there is no chestnut or black on the wings, the white on the secondaries is dull, and the whole of the feathers on the underparts have obscure, ill-defined, brown centres." (*Salvadori*.)

Young in down are like those of the Mallard, "but there is a more pronounced golden tinge on the throat and cheeks, the streak through the eye is more defined, and there is a small dark spot at the junction of the mandibles, which the Mallard has not." (*Yarrell*.)

After the breeding-season the drake assumes a plumage similar to that of the duck, returning to his full dress attire before the winter has fairly set in, though a few males may still be found in the female garb as late as the middle of November.

Outside India the range of this fine duck may be said to be the Northern Hemisphere. It breeds practically right across its habitat in the sub-Arctic

regions, and in the winter ranges down to Northern and Central Africa, and perhaps even further south, almost the whole of Southern Asia, and again as far south as Mexico and Jamaica in America.

Within India, it is easier to say where it is not found rather than to enumerate all those places in which it does occur. Roughly speaking, it is found in vast numbers from the Himalayas, throughout Sind, North Bombay, the North-West Provinces, Punjab, and Bengal ; from there it gets less common as it wanders south, until in Southern India, south of Mysore, it is not found at all, though Dewar records that it occurs in Madras.

Throughout Assam, Manipur, Tipperah, and in Burmah it abounds, and it is plentiful also in the Sunderbunds. Of course, in some places it is more exceedingly abundant than in others. Thus in 1882-83, in Bengal, we found that the Gadwalls numbered at least two to every one of all other kinds of ducks lumped together. Of a magnificent bag made by three guns in the Moolna bheel (Sunderbunds), out of 140 couple Ducks and Teal I think at least 40 couple, if not more, must have been Gadwall, and of the rest probably 70 or 80 couple were Teal of sorts. Woods speaks of patches of water in Manipur "looking black with the number of Gadwall assembled there." They begin to arrive there, according to him, about the 15th October, and though in Kashmir and along the Himalayas a few birds may arrive earlier, this will be found to be about the earliest date for Northern India.

In Mysore they do not arrive until the end of November as a rule, and at intervening places will be obtained on intervening dates. In Lower Bengal we never expected to see many before November, and I think they were most common in late December and early January. Hume says, *re* birds again leaving :—"In the south they leave by the end of March or early in April. Farther north they are somewhat later (it depends a good deal on the season) ; and both in Sind and the Western and North-western Punjab they are frequently shot in the first week of May." The dates are, I think, too late for Bengal and Assam, where there are few birds left after the first week or so in March. When out snipe-shooting in that month on extensive jheels and similar pieces of water, a few Gadwall may still be put up, but nearly all that are seen will be hurriedly making their way north.

Major Woods, I.M.S., says that even in Manipur they leave about the end of March.

An interesting fact noted by this close observer is, that many, perhaps the majority, of the ducks pair off before leaving their winter-quarters. He says most of them pair in March, but that he has noticed some pairing

as early as February. No one seems ever to have noticed these birds arriving at their breeding-grounds in pairs, so it is to be presumed that, their preliminary courtship completed, the pairs re-assemble in flocks which remain together until they reach their nesting-haunts.

The Gadwall ranks very high up in the table of duck precedence, as there are so many good points about it which attract favourable notice. As an article of diet few ducks are better. Some people would give the prize in this respect to the Mallard, others perhaps to the Pintail, but take the Gadwall all round it is hard to beat on the table. Personally, I have never known this duck to have a fishy or other unpleasant flavour, nor have I met any Bengal sportsman who has charged it with this crime. But the Northern Presidencies have held men sometimes who have complained of this flavour when they first arrive. They *ought* to be alright, as they are almost entirely vegetable-feeders, subsisting much on wild and cultivated rice, water-weeds, &c., and seldom varying the diet with animal food. A drake shot in Silchar was found to contain a mass of small white worms in addition to some water berries and half-ripe rice, but this in no way affected the flesh.

Before cooking, however, he has to be shot, and though not, as a rule, a very shy bird, yet he is quite wide awake enough to make the getting within shot of him an interesting, if not difficult, job. Where, too, he has been much shot at, all one's ingenuity and perseverance will be required before the game-bag can be made to assume the bulgy appearance it ought. Then, when you have got within shot, the Gadwall proves a thoroughly sporting bird: he is quick off the water, rising rather straight up into the air, and getting very soon well under way; and in full flight the Gadwall is even faster than the Mallard, and, as many writers have observed, reminds one much of Teal in the manner of flying and the swish-swish of the wings as the flock hurtles overhead, leaving, let us hope, two birds in response to the right and left with which it has been greeted.

When shooting in the old dāys over vast jheels in Khulna and Jessore, though Teal might and generally did form the majority of the birds got, yet we always hoped that Gadwall would, and it was certainly these birds that gave us the most sport.

In some places the jheels themselves, vast stretches of water, shallow in the cold weather and much overgrown all round their borders with weeds, reeds, and lilies, were surrounded with rice-fields, and through these wandered shallow water-ways, some natural and others artificially made either for draining or irrigation.

Daybreak would see us making our way from one of the main rivers up such a water-way, which we might have to traverse for some two or three miles before reaching the piece of water which formed our destination. Our boats were the light flat-bottomed kundas, or canoes, used so universally all over North-eastern India ; and our seats were low morahs, or cane seats, which enabled us to swing round and get shots to our rear as well as in front and both sides, which a seat right across the boats would have prevented. We had not, however, to wait until we got to the jheel for our shooting, for Snipe constantly got up to our right and left and Teal rose within shot in a manner far beyond what we hoped for later on ; moreover, the feeding flocks were scattered, and one bird down another shot might well be hoped for. Here and there, too, a Gadwall would find its way within range, these only getting up from patches of rice more than usually dense and thick. Less often a few Pintail would flash across us, but rarely within shot ; also Pochards, White-eyes, and Shovellers were all to be seen at intervals. Whilst it was still cool and a few wisps of gently quivering mist were still lingering on the top of the water, loath yet to dissolve their ghostly lives into nothingness, we were generally well into the jheel and had scattered out into a long line. Snipe we now allowed to get up unheeded, though as yet they were but few, for not until the sun rose high and hot did they forsake the rice-fields and take to the deep water and the cool shade of lily-leaves. Whistling-Teal swarmed in all directions and kept circling round everywhere in countless myriads ; Purple Coots flustered and fluttered across the tops of the reeds and through the rushes ; the little Water-Rail scurried across the surface of the water-plants ; and other undesirable birds, such as Water-Hens, Jacanas, &c., were in evidence in every quarter. Still the continuous popping of the guns all down the line showed that all the birds were not undesirable ones. Constantly amongst the Whistlers overhead there would appear a flock of swifter, more quickly wheeling birds, as the Blue-wing Teal came through them, roused by one of the other boats ; or a flock of Common Teal, flying in much the same manner, would rush down nearly the whole line, a splash or two in the water marking the members of their mess whom they had left behind. The duck, however, got up in front and went straight away, seldom wheeling within reach of even the outermost boats, though now and then a flock sweeping past high overhead would offer a difficult and often useless shot.

The Gadwall, which were generally only in small flocks, were usually found where there was a certain amount of cover, which, assimilating with

the green screen on our boats, allowed us often to get within shot. They dive and swim very well when only wounded, and many a ten minutes was spent in retrieving such birds, for whose sake we generally kept a stock of No. 8 cartridges ready at hand to use instead of the No. 4 or 7 we used for others. About 10 A.M. our boats all worked in towards some fixed point, and from about 11 A.M. to 1 P.M. was given over to lunch and smoke and an examination of the bag. Between 1 and 2 P.M. we would again embark, and the same routine was gone through only reversed, and the shooting back through the rice-fields was the finale of the afternoon's programme.

It was seldom on such days that the three guns, who were generally out, could not get their fifty couple of game-birds, by which I mean that Whistlers, Cotton-Teal, and even Snipe did not count towards the bag. As a rule, the comparative number of Snipe would be small, as they were not shot at except at the commencement and end of the day's shooting; and we always considered the bag good or otherwise according to the number of Gadwall, Pintail, and other big duck contained in it.

I have no record now of what we got, but certainly we often got fifteen couple of Gadwall, and sometimes over thirty, whilst on one occasion, I think, the three of us got over forty couples.

The Gadwall did not seem to mind much what sort of water it was in: early in the mornings and late in the evenings they were to be found in the rice-fields—generally, as I have already said, in some corner where the cover was denser than elsewhere; an hour after light they left the rice-fields and were found swimming about in semi-open pieces of water, but seldom in the large open expanses in the centre of the lake. It was very noticeable that in the rice-fields the birds were constantly seen either singly or in pairs, yet as soon as they left these they were very seldom found in pairs, and practically never alone, but in flocks numbering ten to twenty, sometimes as many as forty. They seem to put on fat quicker than any other duck, or perhaps they feel the exertion of migration less.

Of course the Mallard, which migrates often from parts very close to us, arrives fat; but I have noticed that early in the season, when other ducks are very poor, the Gadwall is usually in quite a plump condition.

The Gadwall has not yet been found to breed within our limits, in spite of Hume's hopes to the contrary. That these are not groundless, however, is shown by the fact that a duck shot in Cachar contained eggs in the ovaries as large as a big marble; and surely this bird could not have meant to have migrated far for the purpose of breeding. This bird was shot in

the end of April. Again, a pair of birds were reported as having been shot in Kashmir in June (date ?), but the person who shot them, finding the ovaries "very attenuated," jumped to the conclusion that the birds could not have been breeding. Is it possible that the eggs had been laid?

It has been noted as breeding in the British Isles, and also in Norway and Sweden ; indeed it has been found to nest as far north as Iceland, and there is a doubtful record of its having been found in Greenland. Its usual breeding-habitat is, however, far more south : throughout Southern Europe from Spain to Russia—not in Northern Africa, as far as we yet know,—in North-west Asia, in the sub-Arctic regions, and in North America, where it has been found during the breeding-season as far south as Texas.

Its nest is much like that of the Mallard or of the Spotted-billed Duck, but, unlike the former, I have never heard or read of its breeding in trees.

The nest is generally placed at the edge of the water in amongst dense sedge, reeds, or bushes, and appears to be carefully concealed as a rule ; it is made of reeds, grass, or any other similar material, or sometimes a few twigs, and is more or less lined with down from the birds themselves.

The eggs are said by various authors to number five to fourteen ; but probably six to eight or ten is the normal clutch.

The eggs vary much in colour, from an almost pure white to a greenish-drab. As with most eggs of ducks, as incubation advances the colours get duller and darker, and eggs which are white with a clean yellow or green tinge when first laid become dull grey or drab with the green tint dulled and sometimes lost. In texture and shape they do not vary from those of the Mallard, except in being slightly smaller.

Thirteen eggs, measured by Hume, are said to have averaged 2.62 by 1.51 inches ; but this is probably a mistake for 2.26 by 1.51, within which limits all the eggs come which have passed through my hands.

The Gadwall seems to thrive well in confinement, and has often bred under these conditions, including several times in Zoological Gardens.





THE WIGEON.
Mareca penelope

J. Gould, del. me

Genus MARECA.

The genus *Mareca* differs principally from *Nettion* in having a smaller bill, which is distinctly narrower and rather tapering towards the tip; from *Chaulelasmus* it differs in not having the lamellæ of the upper mandible so prominent, and the tail-feathers are more pointed, the central rectrices extending beyond the others.

There are only three species in the genus, of which but one, *M. penelope*, reaches our limits; of the other two, one, *M. americana*, is a North-American form, whilst the other, *M. sibilatrix*, is a South-American bird. All three are much the same size.

(27) MARECA PENELOPE.

THE WIGEON.

Mareca penelope, *Jerdon, B. I.* iii, p. 804; *Hume, Str. Feath.* i, p. 271; *Butler, ibid.* iv, p. 30; *Hume, ibid.* vii, p. 494; *Davis & Wendon, ibid.* vii, p. 93; *Scully, ibid.* viii, p. 63; *Hume, Cat.* no. 963; *Hume & Mar. Game-B.* iii, p. 197; *Vidal, Str. Feath.* ix, p. 92; *Butler, ibid.* p. 438; *Reid, ibid.* x, p. 82; *Hume, ibid.* p. 245; *Davidson, ibid.* p. 326; *Oates, B. of Brit. Burm.* ii, p. 278; *Barnes, B. of Bom.* p. 408; *Hume, Str. Feath.* xi, p. 345; *Salvadori, Cat. B. M.* xxvii, p. 227; *Blanford, Fauna B. I.* iv, p. 445; *Oates, Game-B.* ii, p. 210.

Description. **Adult male.**—Forehead, crown, and anterior nape pale buff, sometimes with a few black dots on the nape, remainder of head and neck dull chestnut, much speckled anteriorly with black, and the chin and throat more or less black also; back, sides of neck and upper breast, flanks, scapulars, rump, and shorter upper tail-coverts vermiculated blackish-brown and white, the rump and upper tail-coverts with the white predominating, longer upper tail-coverts black; central rectrices brownish-black, getting paler on each succeeding pair, the outer pairs being also tipped white; upper breast and lower neck and sides of lower breast vinous-red; under tail-coverts black, rest of plumage white; smallest wing-coverts greyish-brown, more or less vermiculated white; primary-coverts vinous-grey, remaining coverts white; the greater secondary-coverts tipped black; primaries brown, pale-shafted except at the tips; outermost secondaries brilliant metallic green, broadly edged and tipped black; outer web of next secondary pure white, edged black; inner secondaries black, edged white and greyish on the inner webs.

"Irides deep red-brown; bill grey-blue, livid blue, or bluish-plumbeous, the tip black; legs dusky lead, lead-grey, or, rarely, greenish lead-colour, dusky on the joints and webs and with the claws dark.

"**Males (adults).**—Length 19·0 to 19·5 inches, expanse 32·75 to 34·5, wing 10 to 10·5, tail from vent 4·0 to 4·6; tarsus 1·4 to 1·6, bill from gape 1·7 to 1·82. Weight 1 lb. 5 ozs. to 1 lb. 10 ozs." (*Hume.*)

During the early part of the cold weather the feathers of the breast have grey edges, which make the whole breast a pale greyish-vinous; as the season progresses the edges wear off and the breast gets richer in colour in consequence.

Adult female.—Head and neck pale reddish-brown, richer posteriorly and paler below, speckled with very dark brown; rest of plumage above brown with pale edges to the feathers, varying from almost white to rufous, the scapulars and interscapulars more or less barred with the same; smaller wing-coverts like the back, median the same but with broader edges; greater coverts with still broader, paler edges; quills plain brown; a pale blackish-brown speculum edged by the outer secondaries more or less tipped white, and with the secondary next the speculum having the outer web broadly white; innermost secondaries edged with fulvous. Lower neck and breast reddish-brown, sometimes speckled with darker; lower breast, abdomen, and vent varying from white to uniform pale, rather bright rufous-buff, the flanks and axillaries darker and often more or less spotted brown. Under tail-coverts the same as the abdomen, but with the feathers centred dark.

Bill slaty-blue, nail black, the base of the maxilla often darker, the mandible with the commissure, base, and often the tip darker and nearly black. Irides from light dull to deep bright brown; legs grey or drab marked with dusky as in the male.

"Length 17·8 to 19·25 inches, expanse 31·5 to 34·0, wing 9·3 to 10·5, tail from vent 3·5 to 5, tarsus 1·4 to 1·6, bill from gape 1·68 to 1·8. Weight 1 lb. 3 ozs. to 1 lb. 10 ozs. (Note that only one female out of 27 weighed more than 1 lb. 9 ozs.)" (*Hume.*)

Young male.—Much like the female, but the upper parts, especially on the rump and upper tail-coverts, more grey than brown, and soon assuming the vermiculated appearance of the adult male; white about the speculum far more developed, as is the speculum itself, and the breast and fore-neck are a richer brown.

Male in the first nuptial state or changing from the young into adult stage.—Head rich brown, boldly spotted with black, less so below; upper back and adjoining parts as in the female, but gradually changing to grey on the lower back and rump, where it is beautifully vermiculated and stippled with white; upper tail-coverts, scapulars, and innermost secondaries like the upper back; wing like the adult male, but the speculum inconspicuous; lower parts as in the female, but with the breast a very rich rufous, contrasting both with fore-neck and abdomen.

Nestling.—"May be distinguished by the warm rufous tint of the cheeks and throat and the absence of any loreal streak; the upper parts are, moreover, of an almost uniform brown, with hardly any signs of bars on the pinions." (*Yarrell.*)

The Wigeon is found throughout Europe at different seasons, being a permanent resident in some of the northern countries; practically throughout Asia, though rare to the east, breeding in the north and wintering south; in Northern Africa in the cold weather as far south as Abyssinia, Southern Egypt and to Madeira. It also wanders as far as North-eastern America.

Within our limits it is found practically everywhere except in the extreme south and in Ceylon. It is decidedly common in Cachar and Sylhet to my own knowledge, not rare in Goalpara and Kamrup, in which districts I have shot it, and is found throughout the province of Assam, whilst in Burma it has been recorded from N. Tenasserim. It will be noticed that in certain localities one person records this Teal as being very plentiful, whilst another, who may be equally good an observer and naturalist, says it is never found. This is due to the fact that the Wigeon is most irregular in its visits, and whilst it comes one year in hundreds and even thousands to certain parts, yet these localities may be hunted in vain the following season for a single specimen.

Notes recorded by various ornithologists and sportsmen would seem to show that in years of heavy rainfall the Wigeon does not visit India in the same numbers as it does in drier years.

Thus, Reid writes of Oudh:—"The Wigeon is by no means uncommon, though it is, I think, rather erratic in its wanderings, being much more common in some seasons than in others. During the past cold weather, for instance, when the jhils were much below the average size, and many of the smaller ones altogether dry, I did not expect to meet with it; but, as a matter of fact, it was much more common than I had ever known it to be before."

Again, Vidal:—"Wigeon, in some years, are very abundant on the Vashishti River, congregating in large flocks of five hundred birds or more, but they are not, like Common Teal, widely distributed. In 1878-79, after the highest rainfall on record, not a Wigeon was to be found in the district; but in 1879-80, after a year of moderate rainfall, they reappeared in their usual strength on the Vashishti."

Davidson notes it as rare in Mysore, but Major McInroy says that a fair number may be met with in parts. The only way I can at all account for the Wigeon being more common in dry than in wet seasons is because it is very much of a shallow-water or bottom feeder. In very wet seasons the lakes, jhils, ponds, &c. all overflow their normal limits, and thus the edges of the shallow water cover ground on which no water-weeds grow,

and on which the natural dry land vegetation has been killed by the water. On the other hand, in dry seasons the water recedes and much jhil vegetation, which, under ordinary circumstances, would be in a few feet of water, is within a few inches of the top, and well within grasp of the Teal as it feeds with only its tail-end out of water. They are, of course, strong and expert divers, but do not feed, I think, on any stuff which necessitates their going completely under water. Of two birds shot in Silchar, the stomachs contained nothing but the white tendril-like roots of a small water-plant which grows profusely where the water is only a few inches deep, and these the birds could obtain by merely standing on their heads, as it were, in the water. They graze a good deal, like geese, on young grass, and also young crops, and, in addition to various other vegetable substances, eat water-snails, worms, insects, and shell-fish of sorts, this more particularly near the sea-coast, where they are often found in brackish estuaries or backwaters.

Morris writes:—"This species feeds principally on water insects and their larvæ, small mollusca, worms, the fry of fish, and frogs; as also the buds, shoots, and leaves of plants and grass, and these it browses on in the daytime; but it chiefly seeks its food in the mornings and evenings, and also at times in the night."

All ducks, it should be noted, whether as a rule day or night feeders, are inclined to feed freely during moonlight nights, and this is perhaps more especially the case with such as graze on grass and young crops. I never, myself, obtained a single specimen in the Sunderbunds, but have often been assured that they are common there. Hume says that they are as quick in rising as is the Gadwall. I should have given the palm to the Gadwall for quickness in getting off the water, but once up the Wigeon is quite as fast in getting away. On the wing they are certainly not as fast as either the Gargany or Common Teal, nor are they as hard to bring down, for they are less densely plumaged and can carry far less lead.

They vary very much in being wild or the reverse, but, taking them everywhere, in comparison with other ducks they may be said to be cute, wary birds, but falling short in this respect of many of their kind. What adds, too, to the ease at obtaining shots at them is their habit of feeding almost throughout the day, their feeding taking them much to the edges of the jhils and lakes, where they remain amongst the reeds and vegetation. This, of course, hides the stalker and the stalked, and many shots may be obtained at Wigeon by walking round the borders of a lake, whilst most of the other duck are away in the middle of the water,

unapproachable, except by boat, and often not by that. They collect in very large flocks, sometimes numbering as many as seven or eight hundred individuals, but more often will be found in flocks of a hundred or so, and, of course, where they are less common in small flocks of a dozen or less, often in pairs or singly, but in the latter case always with some other duck.

Of their voice, Hume writes :—"They are, on the whole, rather loquacious birds, and both when feeding and at rest, when walking, swimming, and flying, often utter a shrill 'whew,' a sort of whistle by which you may know them at any distance; it is not a clear full whistle like the Curlew's, but a whistle cry, rather discordant when heard by day, but not without its charms when uttered by night by large numbers, mingled with the call of many other species and mellowed by the distance and the multitudinous voices of winds and water."

They fly with a swift powerful flight, generally in line formation, the line nearly always irregular and altering much in shape as the birds fly; the two ends are generally thin, whilst towards the centre the birds are more numerous. When flying from one *jhil* to another, or when put up by shots, they do not, I think, take any particular formation.

Meyer says :—"The Wigeon fly in the usual manner of ducks, following one another; but these birds fly so very close upon the heels of their leader, that it forms a distinguishing peculiarity."

Hume notes the peculiar rustle made by the Wigeon in flying; this is very distinctive, and when close at hand sounds very different to the swish of the Mallard or the sound of other ducks' flight.

In England they are caught in large numbers by decoys, which induce the wild birds to enter some small water-ways roofed in with wire netting, and which gradually lead to a large drop-net in which they are entangled. The placing of the pipes—as the leading tunnel-nets are called—is the main feature of the trap, as these have to be so made that they are quite inconspicuous, and the entrances must be natural ones. Sometimes a small dog is trained to dodge about the pipes, continually showing itself higher up the pipe for an instant or two and attracting their curiosity, which is a strong trait in all ducks. In Goldsmith's 'Natural History,' a little volume dated 1830, it is said that "In only ten decoys in the neighbourhood of Wainfleet, so many as thirty-one thousand two hundred have been caught in a season." This, of course, refers to all kinds of ducks, not to Wigeons only.

To eat, the Wigeon is sometimes first-rate, sometimes decidedly fishy

and rank. At home it is considered quite one of the higher class of ducks for eating, but out in India it is often *not* of a higher class; Hume says of some he got on the sea-coast that they had such distinct "odour of brine from the ocean" about them that they were quite unpalatable. Those shot in Cachar and Assam I have always found very good indeed.

The Wigeon breeds throughout the greater part of its northern habitat, but probably nowhere within the Arctic Circle. It is common in Iceland and still more so in Lapland, breeds throughout Northern Europe, and also, I am told, in East Prussia, and it also breeds in North-west Asia, less commonly to the east. In Great Britain it has often been found breeding in Scotland and also in Ireland, and in 1898 Mr. W. J. Clark has recorded the finding of a Wigeon's nest in Yorkshire, this being the first record of its breeding within the limits of England itself.

Its nest may be placed either close to water in amongst the growth on the banks or shores, or it is sometimes placed a good distance from it. In Scotland it is frequently found well hidden in amongst heather, far from the nearest water. As a rule, it is very carefully hidden, but at other times it is very conspicuous and can be seen from a few yards away. The duck sits very close indeed, and flying up at one's feet usually shows the whereabouts of the nest, however well it may be hidden. The drake would seem to take little interest in the nest or eggs, and leaves the duck not only to do all the incubation, but also to look after the young until they are some days old.

The nest would appear to differ from other ducks' nests in being better put together in most cases. In some nests the materials—moss, leaves, grasses, and weeds—are well intermingled and interwoven with one another and with down, which not only forms the lining, but is also incorporated in the body of the nest itself. Frequently, on the other hand, the nest is very primitive, and consists of only a few of the materials mentioned, just loosely placed in some hollow in the ground.

Dresser, as quoted by Hume, says:—"The eggs are deposited late in early in June, the locality selected for the purpose of nidification being sometimes close to the water's edge and at others some distance from it; but Mr. Colley informs me that he found a nest on the fells, not far from the town of Lillehammer, which was under a juniper bush, at least 800 yards from the water. The nest is a mere depression or hole scratched in the ground, and well lined with down and a few feathers, intermixed with a little moss or a few grass-bents. A nest which I possessed consists of a little moss matted together with down, the latter

being of a dark sooty-brown colour, the centre of the down being rather lighter or a dark sooty grey, and a few feathers of the bird are interspersed here and there.

“The eggs are creamy white in colour and oval in shape, tapering slightly towards the smaller end.”

In rather strong contrast to the above “mere depression or hole” is Mr. Wolley’s description of a Wigeon’s nest:—“A nest is an extremely pretty sight, even when separated from its native bank, and all the accompaniments of flowers, roots, moss, and lichen.”

The number of eggs is normally six to eight or sometimes ten. Morris says five to eight, Meyer ten to twelve. In colour they vary from a pale cream, so faint as to appear white, to a rather warm cream or buff, generally the former. Hume’s eggs measured 2·1 to 2·3 inches in length, and 1·5 to 1·6 in breadth. The texture is, of course, fine and fairly close, with the surface inclined to be glossy. Incubation is said to last about twenty-four days.

Two eggs in my collection, which come from Lapland, are smaller than any of Hume’s, measuring 2·05 by 1·5 inches and 2·00 by 1·45. Both these eggs are also unusually glossy.

Genus NETTION.

The genus *Nettium* or *Nettion* is one of the largest in the order Chenomorphæ. As restricted by Salvadori, there are seventeen species contained in it, of which three only are found in India. The range of the genus is cosmopolitan, and it contains species both resident and migratory, both of which are represented in India.

The differences between *Nettion* and *Anas*, *Chaulelasmus* and *Mareca* have been already pointed out.

Key to Species.

- Speculum, secondaries bronzed green at base, then black and tipped white, and with their coverts tipped rufous . . . *N. formosum*.
 Speculum, outermost secondaries black with white tips, those next them brilliant metallic green, next again to them one black, the remainder like back *N. crecca*.
 Speculum, outer secondaries black except two or three in the centre (7 to 9), which are bronzed green *N. albigulare*.

(28) NETTION FORMOSUM.

THE BAIKAL OR CLUCKING TEAL.

Querquedula glocitans, *Jerdon*, *B. I.* iii, p. 808; *Hume*, *Str. Feath.* viii, p. 412.

Querquedula formosa, *Hume*, *Str. Feath.* iii, p. 494; *id. ibid.* viii, pp. 115, 494; *id. Cat.* no. 960; *Hume & Mar. Game-B.* iii, p. 225; *Barnes*, *B. of Bom.* p. 411.

Nettion formosum, *Salvadori*, *Cat. B. M.* xxvii, p. 240.

Nettium formosum, *Blanford*, *B. I.* iv, p. 442; *Oates*, *Game-B.* ii, p. 182.

Description. **Adult male.**—"Crown of the head, back of the neck, entire throat, and a band extending from the eye across the face to the throat, black; face and neck on the sides and under the throat buff, the buff parts margined narrowly with white; also the black crown from behind the eye is bordered on each side with a white band which runs down the sides of the black nape, and spreads on the sides of the neck; from behind the eye a broad glossy green band

of a crescentic shape passes along the sides of the head and inferiorly changes into black, between the buff colour anteriorly and white band posteriorly; back and scapulars grey, somewhat tinged with brown, minutely vermiculated with black; the inner scapulars elongated, lanceolate, on the outer web black, edged with cinnamon, silky buff, edged with brown on the inner web; lower back and rump greyish-brown; the upper tail-coverts brown, edged with rufous; lower neck and upper breast vinous, marked with small oval black spots; on the sides of the breast, just before the bend of the wing, a crescentic white band; lower breast and belly white; flanks grey, minutely vermiculated with black; under tail-coverts black, but marked with bay on the sides, the longer ones whitish-buff at the tip, with slight vermiculation; on the lower flanks, just at the base of the tail a band of silky white, formed by the tip of the feathers; wings pale greyish-brown; the last row of the upper wing-coverts tipped with cinnamon, forming a band which borders anteriorly the wing-speculum; the latter is glossy green anteriorly, with a subapical velvety black band, and bordered by a white band at the tip of the secondaries; the longer tertiaries marked with velvety black on the outer web; quills pale brown; under wing-coverts brown-grey, the greater ones pale grey, the centre ones and the axillaries whitish, minutely spotted with brown-grey: bill dark bluish-brown; feet light greyish-blue, darker on the web; irides chestnut-brown. Total length 18 inches, wing 8·5, tail 4·2, culmen 1·5, tarsus 1." (*Salvadori*.)

"Length 15·8 inches, wing 8·15, tail 3·9, tarsus 1·3, bill at front 1·5, from gape 1·92." (*Hume*.)

"The tarsus . . . in a fine male from China is 1·4 inches." (*Hume*.)

Again, Temminck and Schlegel give the dimensions of the tarsus as 1·28 inches.

Of the four specimens in the Indian Museum, Calcutta, the measurements of the tarsus of the males are 1·2 to 1·3 inches; the measurements were kindly supplied to me by Mr. F. Finn.

Female.—"Upper parts, wings, and tail brown, with paler edges to the feathers, crown darkest; speculum as in the male, but the rufous and bronze-green bands duller; a buff spot on each side of the head in front of the lores, another under each eye; sides of the head and neck buff or pale rufous speckled with brown; lower parts white, except lower fore-neck and upper breast, which are light rufous-brown with dark spots.

"Length 15·0 inches, culmen 1·45, wing 7·8, tail 3·5, tarsus 0·9." (*Dresser*.)

"The only female in the Indian Museum, Calcutta, has a tarsus measuring 1·3 inches." (*Hume*.)

"The male assumes, after breeding, a plumage very similar to that of the female, from which he is only to be distinguished by the darker brownish-red tint of the upper breast, and the comparatively uniform colour of the upper back, the feathers of which, in the female, are darker and very conspicuously bordered with reddish buff." (*Hume*.)

Young.—"The young in down are easily recognised by the spot at the root of the bill and the stripe by the eye, which agree exactly with those of the female, but are yellowish instead of white." (*Middendorff*.)

Roughly speaking, the habitat of the Clucking Teal may be said to be the eastern portion of Asia, south of the 70th degree north latitude, and east of longitude 80 degrees. To the south its boundary may be taken as the 20th degree latitude. It is extremely common in many parts of Southern China, central East China, Formosa, and the south of Japan in the winter, but it has at no time been reported from Yesso or elsewhere to the north of Japan. The extreme north of China, Mongolia, Manchuria, and perhaps Korea, it seems only to visit on migration, its summer home being Northern Asiatic Russia and Siberia.

Salvadori says that it "straggles into the Western Palearctic Region (Italy and France)." And, again, in Latham's 'General Synopsis of Birds' (1780) I find the following under the heading of *Anas glocitans*:—"Taken in a decoy in England. Has also been met with along the Lena and about the lake Baikal. Has a singular note somewhat like clucking."

Within Indian limits its occurrence has been of the rarest, and can be counted on one's fingers. Blyth got a male in the Calcutta bazaar. Col. McMaster says that he believed that he got what was a specimen of this species in the Upper Sircars. Mr. E. James had a painting of the head of a Teal, said to have been shot in Sind, which was undoubtedly—the painting—that of this species. In November, 1879, Mr. Chill got a male Clucking Teal about 30 miles south of Delhi; this he preserved and sent to Hume. Thus up to Hume's time the records of its actual occurrence are but two in number and of its possible occurrence but two more.

On the 16th December, 1898, Mr. E. L. Barton, of Bombay, shot a male Clucking Teal about 20 miles from Ahmedabad, in Guzerat, and the skin is now in the collection of the Bombay Natural History Society.

The only record since this is that of one shot by Col. Row, 8th Goorkhas, in the Dibrugarh district of Assam.

Information of this duck's habits is meagre in the extreme and I can find practically nothing of interest.

Its flight is said to be swift and teal-like, but instead of, like the Common Teal, flying at great heights when on migration, they fly low and close to the surface of the country. This habit of flight, however, is probably only a distinctive feature as the Clucking Teal approach their destination, for Przevalsky writes: "When migrating these ducks fly very low, following the plains which abound with lakes, and as soon as one is perceived which is not frozen they at once settle down on it."

Most noticeable of all their characteristics is their voice. They are,

especially the drakes, noisy birds, constantly uttering a strident, clucking call, like the syllable "Mok," repeated very quickly. I have heard their cry likened to the Cotton-Teal, as uttered by the latter bird when flying, but far louder and more distinctly syllabized.

As a rule, it would appear that they are inland birds, keeping much to the swamps and morasses, or to rivers, and less often to large open sheets of water. In Japan and Formosa it has been seen on the sea-coast, in tidal creeks, and, I believe, even on the sea-shore itself.

They are shy birds and difficult of approach as a rule, but appear to become less so during the breeding-season. Ruddle says that he saw in company, "in a small morass above the Udir rivulet, *Anas boschas*, *A. crecca*, *A. gloeitans*, *A. clypeata*, *A. acuta*, and a few of *A. penelope*, sitting quietly close together after a meal, resting."

As regards their breeding, the two notes quoted by Hume are all there are on record.

Middendorff says:—"Although the commonest duck on the Boganida (70 degrees north latitude) it did not occur as far north as the Taimyr River. It was not observed before the 12th June on the Boganida. On the 3rd July we found a nest on the river-bank under a willow bush containing seven fresh eggs. On the 24th July the young in down began to exhibit feathers on the head, shoulder, and wings, but were still unable to fly on the 4th August. On the 28th July a male was shot which had lost its perfect plumage. The latest birds were seen on the 23rd August on the Boganida. This bird was similarly plentiful on the Stanaway Mountains (Aim River). And at Udskoj-ostrog, where it arrived during the first week of May The eggs are bluish-yellow in colour and small—the smallest was 1·98 inches long by 1·4 greatest breadth."

Of course, Middendorff meant *largest*, not smallest, as he gives the greatest breadth, and 1·98 inches seems big for the egg, not small. In the lines above quoted the point which will be most quickly noticed is the extremely brief breeding-season. Thus, although the 12th June is the earliest date on which the bird was seen, yet the last disappeared on the 23rd August, giving little over two months for the whole business of making the nest, laying the eggs, hatching—which we may presume would take up from 20 to 25 days,—and bringing up the young. As it would take some ten days to lay the normal clutch of eggs and about five at least to make the nest, the only conclusion is that once hatched the young take well under the month to arrive at their full powers of

flight. As this is not quite likely, it is probable that though no birds were *seen* before the date mentioned, yet many must have arrived in late May ; and when we look at the dates they arrive elsewhere, this is the most probable solution.

In the Amur they arrive and breed very much earlier. The only egg of this duck in my collection is one of many I owe to the generosity of Herr M. Kuschel, of Breslau, who has given me one bearing the date 28th April, 1895. The early date of this egg supports the idea that they must breed earlier than in June in Northern Siberia also.

The egg is a typical Teal's egg, the texture very smooth and fine, but without any gloss ; the shape oval, with one end decidedly smaller than the other, though obtuse ; the colour is a very pale, creamy *café-au-lait*. In size it is 2 inches long by 1·37 broad, which makes it a rather longer, yet at the same time a rather narrower, egg than those hitherto described.

Taczanowski thus describes a clutch of eggs sent him from Darasan, where they breed in numbers, by Dybowski :—"They are somewhat larger than those of the Garganey ; their colour is a pale greyish-green, very like that of the eggs of the Mallard. They vary from about 1·8 to 1·9 inches in length, and from about 1·3 to 1·4 in breadth."



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THE COMMON TEAL.

Nettion temminckii

♂

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(29) NETTION CRECCA.

THE COMMON TEAL.

Anas crecca, Legge, *B. of Cey.* p. 1083.

Querquedula crecca, Jerdon, *B. I.* iii, p. 806; *Hume, Str. Feath.* i, p. 262
Adam, ibid. p. 402; *Butler, ibid.* iv, p. 30; *Hume & Davis, ibid.* vi, p. 489;
Dauids. & Wend. ibid. vii, p. 93; *Ball, ibid.* p. 232; *Hume, ibid.* p. 494;
id. Cat. no. 964; *Scully, Str. Feath.* viii, p. 363; *Hume & Mar. Game-B.*
 iii, p. 205; *Vidal, Str. Feath.* ix, p. 93; *Butler, ibid.* p. 438; *Reid, ibid.*
 x, p. 83; *Dauids. ibid.* p. 413; *Taylor, ibid.* p. 467; *Oates, B. of Brit.*
Burm. ii, p. 285; *Barnes, B. of Bom.* p. 409; *Hume, Str. Feath.* xi,
 p. 346.

Nettion crecca, Salvadori, *Cat. B. M.* xxvii, p. 243.

Nettium crecca, Blanford, *Fauna B. I.* iv, p. 443; *Oates, Game-B.* ii, p. 172.

Description. **Adult male.**—"A broad band from the back of the eye, down the nape and upper neck, metallic green, sometimes glossy black posteriorly; a narrow white line from the base of the maxilla, running upwards over the eye and the green band, and another from the fore corner of the eye running under the green band; the remainder of the head and neck rich, rather dark chestnut; the point of chin or whole chin and edge of lores more or less black; lower neck, upper back, inner scapulars, sides of vent, and flanks vermiculated dark brown and white, the vermiculation on the upper part increasing in breadth towards the breast, on the sides of which they become bold black and white bars and in the middle of the breast merely round black centres to the feathers; remainder of back brown, sometimes slightly vermiculated at the sides; rump brown, the feathers edged paler; upper tail-coverts rich brown, edged buff; rectrices brown, edged paler; lower surface white; under tail-coverts buff at the sides, black in the centres; greater coverts broadly edged white or buffy white; remainder of coverts and primaries grey-brown; outermost secondaries black, edged narrowly white, the next three or four metallic-green, and the one next again to them black with a very narrow white margin; the remaining innermost secondaries a beautiful silvery-brown, and the outermost scapulars buff, with broad velvety black diagonal edges.

"In the adult the bill is black or blackish, brownish on rami of lower mandible.

"Irides are brown, varying in shade from light hazel to almost black.

"The legs and feet are commonly grey with a faint olive tinge (the webs and claws in all cases dusky), but they vary in shade a little and at times are bluish-grey with a brown shade, and at others a distinctly dark slaty-grey, sepia-grey, brown, greyish-brown, olive, greenish-olive, dirty greenish-plumbeous, or even plumbeous." (*Hume.*)

I have found a green tinge on the tarsus and toes very common, indeed more so than a pure grey or plumbeous.

"Length 14.5 to 15.85 inches, expanse 23.0 to 25.25, wing 7.2 to 8.0, tail from vent 3.0 to 3.6, tarsus 1.0 to 1.2, bill from gape 1.5 to 1.77. Weight 7.7 ozs. to 12.0 ozs." (*Hume.*)

"Total length 14.5 inches, wing 7.25, tail 3, culmen 1.6, tarsus 1.1." (*Salvadori.*)

Adult female.—Upper head dark brown, the feathers edged rufescent white; lores, throat, and neck rufescent white, with speckly brown centres to the feathers, larger and more distinct on the neck; chin and fore-throat the same but unspotted; flanks and breast more or less with dark centres to the feathers, always pretty plain on the former, but sometimes practically non-existent on the latter, though, on the other hand, they sometimes show up as distinct dark brown drops; the ground-colour of the lower parts may be anything from almost pure white to a distinct rufous or buff; scapulars like the back, but generally more richly coloured; remainder of wing like that of the male, but with the speculum usually duller.

"Length 13.5 to 14.9 inches, expanse 22.5 to 25, wing 6.5 to 7.4, tail from vent 2.9 to 3.5, tarsus 1.0 to 1.2, bill from gape 1.5 to 1.77. Weight 7.7 ozs. to 12 ozs." (*Hume.*)

"In young males and females the lower mandible, though sometimes only brown, commonly varies from brownish-yellow to dull orange, and is generally brownish at tip. The upper mandible also in females is usually rather paler coloured than that of the male, and is often tinged with green or plumbeous green." (*Hume.*)

Legs and feet are also more often tinged strongly with sienna than are those of the male. The irides are the same light to dark brown.

After the breeding-season, or when the eggs have been laid, the males assume a plumage similar to that of the female, but have the upper parts more a uniform brown.

Morris says: "The male assumes the plumage of the female in summer by the end of July or beginning of August, and this he retains until the general moult."

The young are like the female, perhaps rather darker in general hue, but have the pale edgings to the upper feathers more pronounced, and the spots and bars on the lower plumage more numerous and distinct, the former showing often in the centre of the abdomen and the latter on the under tail-coverts.

"**The nestling** is yellowish-white on the underparts, buff on the forehead and throat; a dark brown streak from the forehead to the crown, which, with the upper parts, is brown; a dark loreal streak, and two other streaks from behind the eye to the nape, on each side." (*Yarrell.*)

The drakes, when they arrive in India, are often in a beautiful transition-stage, and few will be found in perfect male plumage before January. I have a most handsome young male in my collection which is a very good example of the changing plumage; above it is like the female, but without the broad edging to the feathers, and on the rump and upper tail-coverts are a few feathers showing the beautiful black and white vermiculations. The head is dark brown with the merest trace only of the black eye-streak; the under plumage is pure white, but all along the flanks, vent, and under tail-coverts, and here and there on the

abdomen, are still left feathers of the old plumage, which are a bright rufous-buff. The new feathers of the flanks are like those of the adult male, and the breast is beautifully spotted with distinct oval drops; the upper breast and neck is a dull rufous.

From the above description it may be seen that it does not follow that because one year a bird has rufous or rufescent plumage he will have the same again after the next moult. In the bird just described the new plumage is a very pure white, but the old patches are exceptionally bright rufous. From this we might infer that the habitat and its water have much to do with the coloration of the lower parts, yet a female in new plumage shot with this young male is very rufous indeed.

The Common Teal extends through the Palæarctic Region in the summer, breeding as far south, according to Hume, as the 40th degree north latitude, and migrating south during the cold weather into Northern Africa as far as Abyssinia on the east and Wadan on the west, practically the whole of Southern Asia, and the Atlantic coast of North America. It occurs, though rarely, in Greenland.

In British India it is found everywhere with very few exceptions. From the extreme north down to Cape Comorin it is very abundant, though perhaps more so to the north than to the south, but even there it is spoken of as appearing in flocks of hundreds.

Hume gives the exceptions to its habitat as follows :—"The Laccadives, the Andamans, and Nicobars, Tenasserim, Southern, Central, and North-east of the Salween, and possibly Malabar."

From these places must now be struck off the Andamans, Nicobars, and Malabar, the bird having been found frequently in the latter place since 'Game-Birds' was written.

In Legge's 'Birds of Ceylon' it is said not to occur in the Philippines, but lately I have heard that it has been met with there also.

Hume seems to think that *Querquedula circia* arrives in India earlier, if anything, than the present Teal, but further observations have shown them to arrive at much the same time, though one year the Garganey may be first and the next year the Common Teal.

In 1898 I had quite numerous records of their arrival in Northern India and Assam in August, the earliest being that of a small flock seen on the 22nd of that month. Hume says :—"In the more Northern Plains portions of the Empire, though a few are seen during the latter half of September, and exceptional cases have been reported of their appearance some weeks earlier even than this, I think we may say that the first heavy flights arrive during the first week of October." Hume, I

think, refers in this paragraph mainly to North-eastern and Central India, and it would therefore really seem as if the Common Teal were earlier in Northern Bengal than in those parts, reversing what is the usual rule with most, if not all, other migratory ducks. By this I do not mean to say that the Teal are all with us by September, even in the northern parts of Assam, but I do mean to say that by the middle of that month they are quite common in many parts and in some are fairly numerous by the second week.

It is possible, indeed probable, that our eastern birds are those which come from China; and as they breed there as far south at least as the 40th degree latitude, they have not nearly so far to come as those which travel from the west, few of whom really come from further south than about the 50th degree.

Teal are extremely variable in the numbers in which they collect. Often they may be seen singly or in pairs, and at the same place flocks may be seen numbering their hundreds, even thousands. The largest flocks appear to be met with in Sind and the north of the North-West Provinces and the Punjab, and perhaps Northern Rajputana. In these places they are to be seen literally in flocks of many hundreds, and frequently of thousands. On the Sunderbunds I think I have seen as many as five hundred in a flock; in the famous Chilka Lake I have been told of their rising in vast flocks which must have been nearly a thousand strong, and from other parts of India reports are given of flocks numbering hundreds.

The most common-sized flock all over their range may be somewhere between twenty and forty, and in Southern India—*i. e.*, from Mysore to Ceylon—anything over the latter number is rare, though even in the island Mr. G. Simpson, as quoted by Legge, says: "In the island of Delft and at the Palverainkadoo lagoon, on the north-west coast, it appears yearly in thousands in November, leaving at the end of February."

The Common Teal is one of the most attractive of the duck tribe to the sportsman, both from its being so numerous and from its habits. Although mainly a night feeder, yet in places where its food-supply lies in the flooded rice-fields and the edges of swamps, bhils, &c., it will continue to feed for an hour or so after daylight, and even when it has finished feeding it remains in amongst the weeds, reeds, and other cover near the shores. It thus affords excellent sport, whether with a dog or two, or a few beaters, or from some small dug-out poled quietly along by a single man in the stern. The Teal often lay close enough to allow of constant shots at from 25 to 40 yards, and as they often scatter a good deal, even when resting, two or three shots may be obtained at the same flock. In this way, on

large sheets of water, a good bag may be made before the birds get scared and leave altogether, or else rise far out of shot.

Nowhere in Bengal have I found Teal to be of a very confiding nature, but that they are so in some parts of their Indian habitat is well known. Hume writes :—"They are, as a rule, when met with near villages, or in densely populated portions of the country, excessively tame—too tame to render shooting them possible, unless you really require them for food. Not only will they let you walk up to them when they are on a village pond—as close as you please,—but when you have fired at them and killed two or three, the remainder after a short flight will again settle, as often as not, well within shot. Nay, at times, though fluttering a good deal, and looking about as if astonished, they will not rise at all at the first shot, despite the fact that some of their comrades are floating dead before them."

In open waters such as rivers, &c., and when on the wing, Teal often fly bunched and close together, and form shots which much encourage the bad habits of shooting *into the brown*, quite small flocks often providing from half a dozen to a dozen Teal to a couple of barrels of an ordinary smooth-bore. Of course, even *into the brown* one must hold fairly straight, as the Teal yields to no duck in the speed of its flight, in addition to which the sudden sweeps and turns they take often disconcert the gunner.

They stand a fair amount of shot unless hit well forward, when a single pellet of No. 6 or 7, or even of No. 8, may suffice to bring the bird to bag.

Hume says that they swim easily, but not very rapidly, and that they cannot dive to much purpose.

Whilst agreeing with his estimate of their swimming powers, I can hardly, however, do so with that of their diving. If shot in open water they can be brought to hand easily, for they do not dive for long, and not particularly quickly ; but if shot amongst reeds they are wonderfully smart in hiding and in dodging in and out amongst them, as also in secreting themselves by holding on to the weeds so that they lie entirely under the water except the tips of their bills. I found that in the Sunderbunds they nearly always made for the water-lilies, hiding under one of the huge leaves.

They walk well, and can even run if necessary ; but they do not care for the land, nor do they rest on it, but on the water where there is cover. They rarely feed on really dry land, but frequently in paddy-fields, &c., where there are a few inches only of mud and water. As already said, they are principally night feeders, but where quite undisturbed they feed during all but the hottest hours of the day, say from 11 A.M. to about 3 P.M.

Their food is undoubtedly mainly vegetable, but they do not despise worms, insects, &c., which may come in their way. For the purpose of obtaining food their diving is said not to extend beyond the peculiar semi-dive so much indulged in by the domestic duck, which leaves the tail-end well out of water.

They are excellent eating, and, however poor in condition they may be, never seem to get an objectionable flavour; so good are they to eat, indeed, that they are often kept in Tealeries in Western and Northern India, so as to be available during the hot weather and rains. I have no personal knowledge of such Tealeries, and as Hume's account of what they should be is about as full and good a one as it is possible to have, I must again indent on that much-quoted author. He says:—"Fresh water, and plenty of it, is the first requisite, and to ensure this the Tealery should always be located near the well, and every drop of water drawn thence for irrigating the garden made to pass through it. The site should be, if possible, under some large umbrageous trees, such as we so commonly find near garden walls, and to the east of the trunk, so that the building may be completely protected from the noontide and afternoon sun. You first make a shallow masonry tank, 12 feet by 8 and 10 inches in depth is amply large. 4 feet distant from this all round you build a thick mud wall to a height of 3 feet from the interior. The whole interior surface of this wall and the flat space between it and the tank must be lined with pukka masonry, and finished off with well worked chunam. The great points to be aimed at are to have the whole lower parts so finished off as to be on the one hand impregnable to rats, ichneumons, and snakes; on the other to present no crevice in which dirt, ticks, and other insects can lurk. Outside the walls must be quite smooth, so that no snakes can crawl up them. On the wall you build stout square pillars, 4 feet high, on which you place a thick pent thatched roof. At the spring of the roof you stretch inside a thin, rather loose ceiling-cloth, to prevent the birds hurting their heads when they start up suddenly, as they will at first, on any alarm, and especially when the sweeper goes in to wash out the place. The interspaces between the pillars you fill in with well made cross work (Jaffri) of split bamboo, except one of them, in which you place a door of similar work made with slips of wood. You must arrange that all the water both enters and leaves the building through gratings impervious to snakes and like marauders. Two or three feet outside the walls run a little groove, a ditchlet, in which plant early in the year mulberry cuttings, which will form a good hedge round the place

and keep the sun and hot winds off the building; but this must be kept neatly trimmed inside, or it would interfere with ventilation, and must not be allowed to get higher than the eaves.

“Into such a building in February or March you may turn 200 Teal, some Common, some Garganey, as you can get them. A few Gadwall and Pintail will also do no harm, but they do not thrive so certainly as the Teal; and the Garganey, though very good, is not equal for the table to its smallest congener.”

Teal have on so many occasions been found at different times between June and August in India, that ornithologists have been always kept in a state of semi-expectation that their nests would be found somewhere within our Indian limits, either in Kashmir or some of the Himalayan lakes. Still time has gone on and no such nest has yet been taken, and, personally, I think it is unlikely one ever will be. Amongst the many thousands shot annually, it would be strange if some few, whilst escaping death and even severe wounds, did not receive internal injuries, invisible themselves after a brief period, yet quite sufficient to incapacitate the bird from migration. This would be quite enough to account for the few birds met with at abnormal times; and though these might appear strong and robust on the wing, yet it does not follow that they were equally so a week or ten days before they were noticed. They breed practically over the whole of their northern habitat as far south as the 40th degree, but in the southern portion of this range they only breed here and there in very small numbers. They breed freely in Northern England and in Scotland, though seldom in the southern counties; yet they have been recorded at this season, and their eggs have been taken, in Spain, Greece, North Italy, and South Russia.

They breed very rarely in Greenland, plentifully in Iceland, but not much in the extreme north of Europe, and probably not at all in the extreme north of Asia. Throughout Southern Siberia, Manchuria, and the Amur a great number breed, and a few also in the north of Japan.

They generally make their nests at the edges of swamps and other pieces of water, often where there is actually a little water standing, and even where they make them at a distance from any water the site chosen is nearly always a wet and boggy one. Thus, in Scotland they sometimes breed on the moors in amongst the heather, but they always select some dip which keeps more or less damp and where the water may occasionally collect.

The nest is a large unshapely mass of vegetable stuff, rushes, weeds,

and such-like lumped together in a mass, with a depression in the centre containing a little down.

In Finland, Dresser found the nest placed under bushes or in tufts of grass, and often at some distance from the water.

Legge's note on the nesting of this Teal is so complete yet short that I reproduce it. He writes:—"This species breeds in May and June, resorting to extensive marshes, heaths near water, and large peat-bogs. The nest is made on the ground among grass or rushes or in thick heather, in which latter case it is placed sometimes in the middle of a clump, and so entirely concealed from view that the bird cannot be seen on its nest. The nest is made of dead flags, rushes, grass, reeds, &c., with a capacious interior, which is amply lined with down plucked from the bird's breast. The number of eggs varies from 8 to 14, and occasionally as many as 20 have been found in a nest; they are small for the size of the bird, oval, but slightly more obtuse at one end than the other, of a uniform creamy-white or pale buff. There is a greenish variety sometimes found, very like the Pintail's eggs. A series before me from the Petchora, taken by Mr. Seebohm, varies in length from 1.58 to 1.7 inch, and in breadth from 1.16 to 1.27. The old birds are said to manifest great affection for their young. Macgillivray relates an instance of his finding a brood of young with their mother on a road; and when he took them up to put them to a pond close by, whither he thought the old bird was leading them, she followed him, fluttering round him within reach of his whip.

"The 'nest-down' is dark brown, with pale whitish centres, but no pale tippings."

It is said to be a resident in Egypt according to Captain Shelley and von Heuglin, and to be very plentiful there.

I have two clutches of eggs which seem to average a great deal larger than most. The two clutches, twelve eggs, average 1.76 by 1.31 inches, the longest being 1.83 and the broadest 1.32. In shape they are broad ovals, very regular, yet all perceptibly smaller at one end than at the other. A few eggs are rather longer comparatively, and these generally have the smaller end rather more compressed. The texture is fine, close, and smooth, and in some cases has a faint gloss. All my eggs are a pale buff, and vary hardly at all in depth of colouring.





THE ANDAMAN TEAL.
Nettion albigulare.

J. Green, Chromo.

(30) NETTION ALBIGULARE.

THE ANDAMAN TEAL.

Mareca punctata, *Ball, Str. Feath.* i, p. 88.

Mareca albigularis, *Hume, Str. Feath.* i, p. 303.

Mareca gibberifrons, *Hume, Nests & Eggs*, p. 644; *id. Cat.* no. 966 ter; *Hume & Mar. Game-B.* iii, p. 243; *Hume, Nests & Eggs (Oates ed.)*, iii, p. 290.

Nettion albigulare, *Salvadori, Out. B. M.* xxvii, p. 257.

Nettium albigulare, *Blanford, Fauna B. I.* iv, p. 444; *Inglis, Jour. B. N. H. S.* xv, p. 525; *Wilson, ibid.*; *Osmaston, ibid.* xvii, p. 491; *Oates, Game-B.* ii, p. 158.

Description. Adult male.—"Upper part of the head brown; this colour covers also the upper parts of the cheeks and gradually changes into the white of the lower part of the cheeks and throat; the brown of the cheeks with obsolete dusky streaks; round the eyes there is a ring of white feathers, broader below; in some specimens on the lores or at the base of the bill there are some white feathers; upper parts brown, the edges of the feathers of the back and scapulars pale brown; rump uniform; the feathers of the breast and abdomen pale brown in the centre, and broadly margined with brownish fawn-colour, producing a mottled appearance; under tail-coverts brown, almost uniform; upper wing-coverts dark brown, greater or last row of wing-coverts white, forming a band, diminishing in breadth and tinged with brown inwardly; speculum velvety black, with a longitudinal, coppery-green band on the middle, from the seventh to the ninth secondary, and bounded at the tip by a buff band; the first secondary broadly white on the outer web; tertials broadly velvety black on the outer web; primaries brown, with an olive lustre; under wing-coverts brown, the median ones tipped with white; axillaries white; tail brown." (*Salvadori.*)

"Legs and feet greenish-blue to plumbeous; webs usually darker; claws horny; bill greenish-blue, plumbeous or plumbeous-blue, nail black; in some, the lower mandible tinged with, in one the terminal two-thirds of this, pink; irides reddish-brown to deep brownish-red.

"Length 16 to 18 inches, expanse 24.5 to 27, tail from vent 4 to 4.2, wing 7.5 to 8, tarsus 1.3 to 1.4, bill at front 1.4 to 1.5, from gape 1.7 to 1.8, wings when closed reach from 2 to 2.2 from end of tail. Weight 1 lb." (*Hume.*)

"Rectrices 16 inches" (*Blanford.*). This refers to male and female.

Female.—"Similar to the male, but smaller, and the lower surface duller and the centerings of the feathers less marked, the green band on the wing-speculum more coppery. Total length 15.5 to 16 inches, wing 7.25 to 7.4, culmen 1.3 to 1.35." (*Salvadori.*)

"Length 15 to 16 inches, expanse 24 to 25.5, tail from vent 3.25 to 3.5,

wing 7·1 to 7·4, tarsus 1·25 to 1·35, bill at front 1·3 to 1·4, wings when closed reach to within from 1 to 1·75 of the end of the tail. Weight 12 ozs." (Hume.)

"**Young birds** are similar to the females, but the dusky markings of the under surface are even less distinct." (Salvadori.)

A young bird caught by Mr. Butler, and described by him in a letter to me, was "Similar to the adult, except that the ring round the eye was very narrow and tinged with fulvous. Bill and feet as in adult; eye dark brown instead of reddish-brown."

This Teal is confined to the Andaman and Cocos Islands, but Mr. C. W. Allan shot a specimen at Bassein, Burmah, which was found amongst a flock of Whistling-Teal, on the 15th April, 1898. This bird was recorded in the 'Asian,' and Mr. F. Finn wrote to me that he identified the skin himself, and without any doubt it was that of an Andaman Teal. Nothing was noted as to whether the specimen was a drake or a duck. It was probably driven on to the Burmese coast during some storm, having ventured too far out to sea from the Andamans.

Commander N. F. Wilson has procured specimens of this little duck on the Great Cocos, and again on the Landfall Island. He remarks: "I have always found the birds wherever a freshwater lagoon existed, and I do not think that there is any doubt that the bird is general both on the Andaman and Cocos Islands whenever the above conditions exist."

Nettion gibberifrons, *N. castaneum*, and *N. albigulare* are very closely allied; for a long time the first and the last were confounded with one another, and even now it is by no means settled that *N. castaneum* and *N. gibberifrons* are not one and the same birds. The young males and females are absolutely undistinguishable, but the adult male *N. gibberifrons* has been found to attain a further plumage, which, hitherto, no *N. castaneum* has been found to acquire. *N. albigulare* differs from both these birds in having the sides of the head darker and more uniform in colour and the darker streaks to the feathers obsolete; but the main difference lies in the Andaman Teal having the white ring round the eye and the first secondary broadly edged with white.

There is a good plate of *Nettion albigulare* in the British Museum Catalogue, and on the same plate is shown the head of *N. gibberifrons*, thus giving a comparison between the two birds.

There is very little on record about this Teal, and it is to be hoped that observers will soon add to our knowledge of it.

By far the most important note on its habits is that contributed by

Mr. A. L. Butler to the B. N. H. S. Journal. Lately as this interesting note has appeared, I feel that there is no apology needed, except to Mr. Butler, for again producing it here, nor would any account of the Andaman Teal be up to date were it omitted:—"When I arrived at Port Blair in May, these Teal were in good-sized flocks, resorting principally, at low tide, to two little rocky islets up the harbour, known as Bird Island and Oyster Island. I did not go after them at that time myself, not having a boat; but a fair, though not large, number were killed by some of the officers stationed here. I believe eleven was the result of four barrels on one occasion! As the monsoon commenced, and the harbour became rougher at the beginning of June, these flocks of Teal broke up into smaller parties of five or six to a dozen or so, and retired to the creeks and dyke-intersected marshes, a little inland, near Bamboo Flat and Port Mouat. Towards the end of June these small parties began to break up into pairs; about this time I shot several, and in the paired birds I found the testes of the males enlarged, but the ovaries of the females were as yet in ordinary condition. In the 'Game-Birds of India' Mr. Hume mentions a single nest found in August, and I should think that August or the end of July would be the usual time of laying. I am afraid I am not likely to find a nest, as there are so many hundreds of acres of suitable breeding-ground, and the birds are comparatively few.

"The Oceanic Teal feed a good deal in the paddy-fields at night; under cover of darkness, too, a few birds often drop into small tanks at Aberdeen within a few yards of bungalows and buildings. When in flocks they are very wild, but in pairs, in the small channels among the marshes, I found them very tame. I have often been able to creep up to the water's edge and watch a pair swimming quietly about within ten yards of me for some time. On one occasion I came right on to a pair under an overhanging bush, and they only fluttered, like water-hens, along the surface for twenty yards or so, then pitched and commenced swimming away, so that I was able to kill one on the water, and the other as it rose, from where I stood. Of course birds that have been shot at a bit go clean away at the first alarm. On these creeks they associate with the Common Whistling-Teal, and I have watched the two species in close company on the water, though the Oceanic Teal separate from the others when put up. The only thing I noticed about them, which I do not think has been recorded, is that they have a 'quacking' note as well as a low whistle. One day a party of eight or ten, at which some shots had been fired, after wheeling round and round for some time, pitched on a narrow channel,

within thirty yards of me, as I stood concealed in the bushes on the bank. I watched them for some minutes, when another pair, frightened by some distant shots, came scurrying over; the birds on the water all twisted their heads up, and set up a loud quacking call-note, which they kept up for some minutes. The newcomers circled round several times, but probably seeing the top of my *topee*, concluded not to join their companions in their fancied security. The flight of this Teal is fairly fast. Occasionally, when they have been kept on the wing for some time, a party will stoop down to the surface of a creek as if they meant to pitch, and then change their mind and rise again. When exercising this manoeuvre, they fly past at a tremendous pace. The white wing-bar, in this species, is most conspicuous when the bird is on the wing.

“Winged birds promptly swim for the nearest cover, into which they scuttle off at a great pace, and are generally lost without a dog. One I shot swam steadily along in front of a Pathan convict, who was swimming after it in the capacity of a retriever, and, though hard pressed, made no attempt to dive until it reached the bank, where it was caught. One of the officers stationed here has a live bird in captivity which was pinioned by a shot some months ago. It thrives well on paddy, but has not become very tame. It spends most of the day asleep, with its head resting in the plumage of the back. The local sportsmen have christened them Gibberies.

“They are rather difficult birds to skin, being very fat, and having for a duck rather a tender skin. They seem to average about 15 ozs. in weight.”

To this note Mr. Butler adds the following information, which he has kindly sent me in a letter:—“On December the 2nd I was snipe-shooting at a village called ‘Onikhet.’ Walking down a *band* which was overgrown with rank grass, I almost put my foot on an Oceanic Teal, which fluttered away in front of me, trailing its wings and feigning lameness. Of course, I thought I had got a nest at last, but a rippling movement in the grass in different directions showed me that it was a brood of young ones that I had come across. I instituted a most careful search, but only came upon one youngster, which I caught. All this time the duck was flying round and round within twenty yards, uttering a low double quack. The drake also appeared on the scene, but kept further off and was silent.”

Davison, writing of the Andaman Teal, says:—“It appears to frequent alike both fresh and salt water. During the day it either perches among

mangroves or settles down on some shady spot on the banks of a stream; when wounded it does not attempt at first to dive, but when hard pressed it dives, but does not remain long under water, and appears soon to get exhausted. It feeds by night in the fresh-water ponds, and I was informed that it is to be seen in some small flocks in the paddy-fields about Aberdeen in the mornings and evenings. Sometimes, in going up the creeks, a pair will slip off the banks into the water, and keep swimming about twenty yards ahead of the boat, only rising when hard pressed, but they are more wary when in flocks. I could learn nothing about the breeding of this species. The only note I have heard them utter is a low whistle, and this apparently only at night when they are feeding."

For a long time the only note on the nidification of the Andaman Teal was the one in 'Nests and Eggs' quoted in all other works. It is:—

"Very little is yet known of the breeding of this species. I have only one note of its nidification, and one egg, both of which I owe to Captain Wimberley.

"The nest was found in August; it was composed of grass, and was placed in a paddy-field near Port Mouat, the only locality with which we are yet acquainted in the group where this species is always to be met with.

"The egg is typical, a very perfect broad oval in shape, with a very close-grained, smooth shell, devoid of gloss, and of a uniform delicate cream-colour.

"It measures 1.93 by 1.43 inches."

We have now, however, the following further note from Osmaston, which, whilst it curiously coincides as far as the eggs go with Hume, is absolutely contradictory to the latter as regards the description of the nest. Mr. Osmaston writes:—"The Oceanic Teal arrives in Port Blair in large numbers towards the end of May, where they remain until October or November.

"In the winter months they frequent outlying fresh-water jhils, such as are found near Craggy Island, North Reef Island, Niell, the Brothers Templegany, and other places. They breed, as far as my experience goes, invariably in holes in lofty and often dead trees, and the eggs are therefore very difficult to procure.

"A man brought me down ten eggs from near the top of a Padouk-tree on August 4th. They were nearly fresh.

"They are rather long elliptical ovals, cream-coloured, and much

discoloured. They vary in length from 1·86 to 2·02 inches and in breadth from 1·40 to 1·47, the average of nine eggs being 1·93 by 1·43 inches."

It may, of course, eventually turn out that the Andaman Teal, like the Whistling-Teal, make their nests sometimes on the ground and sometimes on trees.





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THE PINTAIL.
Dafila acuta

Genus DAFILA.

The general appearance of the genus *Dafila* is more elongated than any other of our Indian Ducks; in both sexes the tail is pointed, and that of the male has the central rectrices considerably lengthened when in good plumage. The bill is slightly wider at the end than at the base.

Of the five species of *Dafila*, India has but one, the very widespread species *D. acuta*. The genus is almost cosmopolitan, Australia alone being unrepresented by any form.

(31) DAFILA ACUTA.

THE PINTAIL.

Anas acuta, Legge, *B. of Cey.* p. 1096.

Dafila acuta, Jerdon, *B. I.* iii, p. 803; Hume, *Str. Feath.* i, p. 261; Adam, *ibid.* ii, p. 338; Hume, *ibid.* iii, p. 193; Butler, *ibid.* iv, p. 29; Hume & Davis, *ibid.* vi, p. 489; Ball, *ibid.* vii, p. 232; Cripps, *ibid.* vii, p. 312; Hume, *ibid.* vii, p. 493; *id.* *ibid.* viii, p. 115; *id.* *Cat.* no. 962; Scully, *Str. Feath.* viii, p. 362; Hume & Mar. *Game-B.* iii, p. 189; Vidal, *Str. Feath.* ix, p. 92; Butler, *ibid.* p. 438; Reid, *ibid.* x, p. 82; Oates, *ibid.* p. 245; *id.* *B. of Brit. Burm.* ii, p. 279; Barnes, *B. of Bom.* p. 407; Hume, *Str. Feath.* xi, p. 345; Salvadori, *Cat. B. M.* xxvii, p. 270; Blanford, *Fauna B. I.* iv, p. 447; Oates, *Game-B.* ii, p. 223.

Description. Adult male.—Whole head brown, varying from a rather pale dingy to a rich dark umber, glossy on the upper parts, with purple or copper, more especially on the sides of the snipe and nape; chin and throat sometimes rather paler than the upper parts; nape almost black, grading on the one hand into the rich brown of the head and on the other into the grey of the hind-neck; the grey of the hind-neck formed by the most minute stippings of brown and pale grey, gradually changing into the more pronounced stippings and bars of the upper plumage, which retains the same colour; a white band on either side of the nape joining the white of the neck. Rump like the back; upper tail-coverts black, edged grey; neck and breast white; abdomen the same, but more or less stippled with grey on the lower parts; flanks and sides like back. Longer scapulars velvety black edged with silver-grey; shorter scapulars like the back, but often with dark centres; wing-coverts brownish-grey, the greater tipped with rufous-chestnut; secondaries forming the speculum bronzed-green, tipped white, subtipped black, the feather next the speculum black, on the outer web narrowly

tipped white and with a line of the same next the quill, inner web brownish-grey ; remaining inner secondaries grey on the outer webs, black edged with grey on the inner webs. The central rectrices black, the other rectrices grey-brown ; lower tail-coverts black, except the ulterior ones, which are white ; the flanks next the tail-coverts are white, more or less tinged buff, and with vermiculations fainter than those on the rest of the flanks.

Length about 26 inches, depending on length of tail-feathers, which vary from 4·5 inches to full length, central rectrices 9 inches long ; wing 10·5 to 11·5, tarsus 1·5 to 1·75, bill from gape and from front about 2·25.

“Length of male 22 to 29 inches, tail 5 to 8·5, wing 11, tarsus 1·6, bill from gape 2·25.” (*Blanford.*)

“The drake moults all feathers except the primaries, secondaries, wing-coverts, and six pairs of outer rectrices at the end of June, and assumes plumage very like that of the female, the usual male plumage being resumed by a complete moult in October.” (*Blanford.*)

“Expanse 32·0 to 37·75 inches, wing 10·3 to 11·75, tail from vent 4·8 to 9·4, tarsus 1·5 to 1·8, bill from gape 2·0 to 2·4. Weight 1 lb. 10 ozs. to 2 lbs. 12 ozs.” (*Hume.*)

Irides dark brown, often tinged red ; bill light to dark plumbeous, the culmen, lower mandible, and base darker, almost black. Legs and feet dark plumbeous grey or blackish ; webs, claws, and joints darker.

“In the adult male the bill is plumbeous, light plumbeous, or lavender-blue, with the entire lower mandible, a broad band along the entire culmen, the angle at the base of the upper mandible, and a strip along the margin of its terminal half black.

“In some apparently adult males I have noted the feet as brownish-black, blackish-grey, and uniform dusky.” (*Hume.*)

“Legs blue ; irides brown ; bill black, blue at sides.” (*Vidal.*)

“Legs very pale yellowish flesh-colour, variegated with shades of purplish-brown, darker tint of last on the nail and web-membranes.” (*Swinhoe.*)

Female.—Head brownish-buff, with dark centres to the feathers ; throat and chin pale ; neck the same, speckled brown ; upper parts brown, the feathers edged white or buffy white, and scapulars with a few bars of the same ; the white tips of the greater secondaries and greater coverts form two distinct bars, but there is no speculum ; quills dark brown, the inner ones narrowly edged white and all paler on the inner webs ; lower parts dingy white, more or less tinged buff, or even rufous, and streaked and centred brown.

Irides brown ; bill and legs like the male, but duller, and, as far as I know, the bill never has a blue tinge. I have one female with a distinctly orange tinge to her legs, showing as a sort of mottling on the shanks.

Length about 20 inches, wing 9·75 to 10·25, tarsus about 1·5, tail about 4 to 5·25, bill at front 2·0 to 2·1, from gape about the same.

“Length 20 to 22·5 inches, wing 9·3 to 10·2, tail from vent 4·2 to 5·5, tarsus 1·45 to 1·7, bill from gape 2·1 to 2·35. Weight 1 lb. 2 ozs. to 1 lb. 14 ozs.” (*Hume.*)

Young male.—Has the wing like that of the adult, but is otherwise coloured like the female. The first male plumage to be assumed is that of the back, which

may often be seen in the transition-stage, between the mottled coloration of the female and the fine stippling of the male ; the lower plumage is the next to change, though the broad mottled plumage of the lower flanks is often retained for some time ; and, finally, the dark head and white neck of the adult male is assumed. Young females are very thickly speckled and mottled on the lower surface.

Young birds of both sexes appear to have legs and bills a uniform dusky.

“ **Young in down** have the same pale spots on the upper parts as those of the Mallard, but the white on the throat and belly is slightly suffused with grey instead of buff, and in addition to the dark line passing through the eye, a second line passes from the lores below the eye to the nape.” (*Seebohm.*)

Salvadori gives the habitat thus :—“ Northern Hemisphere, breeding in the northern parts, and migrating southwards to Northern Africa, India, Ceylon, China, and Japan, and in America as far as Panama and Cuba.”

There is practically no portion of the Indian Empire which the Pintail does not visit ; Hume excluded it from South Tenasserim, but it has now been recorded thence more than once, though it appears to be very rare there. Davidson reported it as rare in the Deccan (some writers have found it less rare than he did) ; and Vidal says :—“ Pintails are to be seen in some years in small parties in the large duck ground at the junction of the Vashishti and Fagbudi rivers (South Konkan), but they come late and go early.”

Taken all round, the Pintail is one of the most common of Indian ducks, occurring sometimes in huge flocks, but more often in such as number 40 to 60 individuals. It is but rarely very small flocks are seen and solitary birds or pairs hardly ever. Where they are least common, flocks of only twenty or so may be met with frequently, but this is about the minimum number. As regards the maximum number, it is hard to give figures, but Hume speaks of thousands in a flock, other writers of many hundreds in a flock. I have, myself, both in Bengal and Assam, seen flocks which must have contained from 300 to 500 birds, although such are not of common occurrence. G. Reid, in his “ Birds of the Lucknow Civil Division ” (‘ Stray Feathers ’), speaks of them being “ generally met with in immense numbers,” but he does not define what he means by immense.

Most sportsmen would place the Pintail before all other ducks. As a rule they are extremely shy, wary birds, and are very hard to approach within gun-shot, but one or two people have found them to be quite the contrary ! Captain Baldwin says that he found it an easy bird to approach even when feeding on open pieces of water. This is somewhat confirmed by the fact that in Cachar the natives tell me that they can get at Pintails

far more easily than at other ducks, and it is true that they *do* bring in more Pintails in proportion than they do Gadwalls, Teal, &c. ; at the same time I have personally found them to be the hardest to get at of all the ducks, and such of my friends as have given me their experience have found the same.

In the daytime they frequent large lakes and jheels and rest in the centre of wide, comparatively open pieces of water, shunning such as have thick cover of reeds or similar heavy jungle, yet resorting always to those which have the surface covered with lilies and the smaller water-plants, amongst which they can lie well concealed, yet able to discern at once the approach of anything to their vicinity. During the night—they do not leave their quarters until very late—they visit the smaller jheels and tanks, the rushy banks of the nullahs and canals, and similar places, where they feed, but the first glimmer of dawn finds them on the wing once more *en route* to the larger waters. Big rivers they do not seem to like ; all down the Surma Valley the Pintail is very common, but though found in numbers on the vast expanses of water quite close to the Barak, Surma, Megna, &c., and often seen evening and morning crossing the river high up out of range, yet I have never heard of their haunting any of these rivers.

In the same way I believe they are practically non-existent on the Ganges, Indus, and other large rivers. Small rivers, if of clear and quick-running waters, are no more pleasing to the Pintail ; but small creeks of almost still water, canals which have vegetation about them, are visited for the purpose of food and occasionally a flock may be put up from such places in the daytime.

Their food seems mainly to consist of small and fragile shell-fish, but they also eat a large variety of other animal matter, and also are to a certain extent vegetarians. Unlike, however, the majority of the ducks, which are more animal than vegetable feeders, the Pintail is amongst the very best of birds for the table. Sometimes, it is said, it becomes rank, fishy, and almost uneatable, but as a rule it is excellent and *nearly* always good.

Many others must have noted the peculiarity of the Pintail to which Hume alludes. He writes :—"It is worth noting, because it is a peculiarity almost confined to this species, that during the cold season one continually comes across large flocks consisting entirely of males. I cannot say that I have ever noticed similar flocks of females ; but this may be because the females do not attract the eye similarly, and are not equally readily

discriminated at a distance ; but ‘ bull picnics ’ I have *noted*, times without number, as a speciality of the Pintail.”

They are decidedly good swimmers, sitting light and very high on the water, their long necks and rather raised tails giving them a very graceful appearance : as divers, however, they are failures ; they cannot stay any time under water, nor can I find any observer giving them credit for being able to hide under water, amongst the weeds, or of holding on to submerged weeds, &c., with their feet. Getting off the water they are less quick than some ducks, “ skittering ” along the surface for a few feet ; they rise less abruptly also, but once on the wing they show to the greatest advantage ; their flight is exceedingly swift, probably faster than that of any other duck, and is very easily recognizable. They fly in very regular formation, changing position less than do most ducks, and when close to the hearer the sound of their flight is quite unmistakable. Less noisy and whirring than that of most of their near relations, their flight has a soft swish-swish about it of a very distinctive character. Hume says, speaking of their flight, that it is a “ low, soft, hissing swish,” and this describes it very exactly. Their voice is like that of the Mallard, a distinct quack, but is far softer and also less loud than that of the Mallard, Gadwall, or Spot-bill ; they are, however, silent birds, and one seldom hears them emit any other sound beyond the low colloquial chuckle they sometimes indulge in when resting. I have not heard them calling when on the wing, except when about to settle or just after rising or when suddenly frightened by a shock or other cause. Seeborn says that its voice closely resembles that of the Mallard, and adds “ its call-note is a low *Kak* ” ; and Naumann says that in the pairing-season the male may be seen swimming round the female, uttering a deep click, which, if the observer be fortunately near enough to hear it, is preceded by a sound like the drawing in of the breath, and followed by a low grating note.

On the land they walk easily but slowly, as might be expected from their configuration ; nor will they often be found resorting to it, though Hume records having seen them on the land.

In the autumn the male bird assumes a plumage similar to that of the female, but can, of course, always be distinguished at a glance by the presence of the speculum, which is wanting in the female. Hume says that he has never obtained any birds in this stage of plumage in India, but in my very small series I have two and have seen several others. Yarrell, speaking of this change of plumage, says that it commences in July, and is effected partly by change of plumage, and partly by actual change of

coloration in the feathers. As regards the reassumption of the male plumage he says :—"At the annual autumn moult the males again assume with their new plumage the colours peculiar to their sex, but the assumption is gradual. White spots first appear among the brown feathers on the front of the neck ; by the end of the second week in October the front of the neck and breast is mottled with brown and white ; at the end of the third week in October a few brown spots only remain on the white."

Both my birds were obtained in the third week of October, and are in the plumage ascribed by Yarrell to that of the second week ; the heads are entirely like those of the female.

The breeding-range of the Pintail is practically that of the Gadwall, but it reaches further north, and, on the other hand, does not reach so far south ; for whereas the Gadwall breeds as far south as the 46th degree, Hume places the limit for the Pintail 10 degrees higher up. It breeds in Northern Europe, and eggs and young have been found in the north of the British Isles themselves, and extends thence throughout Northern Asia.

The nest is a rather rough loose structure of grasses, flags, rushes, and similar material, lined, not very thickly as a rule, with down and feathers ; and the eggs are generally laid in early May, though the date depends a great deal on the locality ; in its southern limits the eggs may be laid as early as the end of April, and in its northern from April to August. The earliest eggs taken by Seebohm in Siberia were on the 5th of June. He also describes the nest as being placed "in the grass among the shrubs in dry places, generally at some distance from the water ; they were deep and well lined with dead grass and sedge, and, when the full clutch was laid, contained plenty of down." During the breeding-season, *i. e.* April to August, the Pintail haunts swamps and marshes which are more or less covered with vegetation—the pools, such as there are of open water, being confined to patches here and there, surrounded with bush, forest, or other cover. Open waters, such as lakes, rivers, or similar pieces of water, it avoids altogether ; nor is it any use hunting the banks and margins of such for the nests, which will almost invariably be found in the places first mentioned.

Morris, in 'Nests and Eggs of British Birds,' says :—"Of this species, also, the nest is placed by the margin of, or at no great distance from, water, lakes, ponds, and seas, and is composed of grass and reeds with a little lining of down. Some have been found in ditches and even in standing corn ; it is always well concealed.

“These ducks pair in April.

“From 6 to 8 or 9 eggs are laid. The young are hatched in about 23 days. They at once repair to the water.”

The nest is usually well concealed amidst the shrub and coarse reeds and grass, and takes a considerable amount of searching to discover ; but the duck sits very close, and often rises at one's feet almost, thus disclosing the position, which might otherwise escape detection.

The eggs vary from 6 to 10 in number, being usually 6 to 8, and occasionally only 5 are laid.

In colour they are a pale dull greenish stone-colour, in a few yellowish-stone, but all dull and all pale with no very definite colour such as some ducks' eggs have. There is a slight gloss, sometimes rather pronounced, and I have seen none entirely glossless. The texture is extremely fine and close, and the shell perhaps rather thinner in proportion to the size of the eggs than are the majority of eggs of the Anatinæ.

My eggs seem to average rather large ; I have a clutch given me by Herr M. Kuschel, and collected, I believe, in East Prussia, which averages 2·24 by 1·6 inches, the biggest is 2·27 by 1·62. A number of other eggs I have measured have been well over 2·20 inches, and I have seen none under 2·1.

The eggs collected in Finland, both by Wolley and Dresser, had their measurements recorded as $2 \times 1\cdot5$ inches, but the eggs collected by the latter in Jutland measured $2\cdot22 \times 1\cdot4$.

Genus QUERQUEDULA.

The distinctive feature of the genus *Querquedula* is the bright blue-grey colour of the wing-coverts, which in two species, *discors* and *cyanoptera*, are a bright smalt-blue. The Common Teal (*Nettion crecca*) used to be placed in this genus; but *Nettion* differs from *Querquedula* in the shape of the bill, which is equal in breadth throughout its length, whereas in the latter it is slightly broader at the tip, and also has the nail somewhat larger in proportion.

The internal structure is also different, the labyrinth of the *trachea* being differently formed, being enlarged on both sides downwards in *Querquedula*, but on one side only and upwards in *Nettion*.

There are five species, of which four are confined to America, the fifth alone visiting India in winter. All five are birds of much the same size.

(32) QUERQUEDULA CIRCIA.

THE GARGANEY OR BLUE-WING TEAL.

Anas circia, Legge, *B. of Cey.* p. 1080.

Querquedula circia, Jerdon, *B. I.* iii, p. 807; Hume, *Nests & Eggs*, p. 644; Hume, *Str. Feath.* i, p. 262; Adam, *ibid.* p. 402; Hume, *ibid.* iii, p. 193; Le Mes. *ibid.* p. 382; Butler, *ibid.* iv, p. 30; Scully, *ibid.* p. 201; Butler, *ibid.* v, p. 234; Hume & Davison, *ibid.* vi, p. 489; Butler, *ibid.* vii, p. 188; Ball, *ibid.* p. 232; Cripps, *ibid.* p. 312; Hume, *ibid.* p. 494; *id.* *Cat.* no. 965; *id.* *Str. Feath.* viii, p. 115; Scully, *ibid.* p. 363; Hume & Mar. *Game-B.* iii, p. 215; Vidal, *Str. Feath.* ix, p. 93; Butler, *ibid.* p. 438; Reid, *ibid.* x, p. 83; Hume, *ibid.* p. 418; Oates, *B. of Brit. Burm.* ii, p. 286; Barnes, *B. of Bom.* p. 410; Hume, *Str. Feath.* xi, p. 346; *id.* *Nests & Eggs* (Oates ed.), iii, p. 291; Salvadori, *Cat. B. M.* xxvii, p. 293; Blanford, *Fauna B. I.* iv, p. 449; Oates, *Game-B.* ii, p. 119.

Description. **Adult male.**—Crown and nape deep brown, lighter on the forehead, where it is more or less streaked with white, and sometimes with a faint gloss at the sides. A broad superciliary stripe from in front of the eye, down the sides of the nape, white; chin black; remainder of the head and neck rich bright chocolate streaked with white; back, rump, upper tail-coverts and tail brown, the feathers all edged paler or greyish-brown; inner scapulars black,



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THE GARGANEY OR BLUE-WING TEAL.
Querquedula circoia.

glossed green, with broad wide central streaks and narrow white margins; outer scapulars the same, but with the outer webs broadly blue-grey; wing-coverts bright pale French-grey, the greater ones broadly edged white, forming a wing-bar; outer secondaries brown-grey, glossed green and tipped white; quills brown; the inner primaries greyish, broadly edged greyish-white; breast brown, with black or dark brown markings concentric on the upper breast, in the form of bars on the lower breast, gradually changing one into the other; abdomen white, more or less speckled with brown towards the vent; thigh-coverts brown and white; flanks white, finely barred with black, the feathers nearest the tail with two broad bars of white and grey divided by a narrower black line; under tail-coverts white or buffy-white, the shorter with brown drops; under wing-coverts mainly dark grey, the central ones and axillaries white.

Irides dark brown; bill brownish-black, nail black, margins of maxilla and lower mandible paler; legs and feet dark grey.

I have a bird which had the feet bright orange; this must be something very unusual.

"In the adult male the bill is normally blackish above, brownish on the lower mandible, except at the tip, often reddish-brown at the gape.

"The legs and feet are grey, pale greenish-brown, grey with an olive shade, grey slate-colour, purplish slate-colour, bluish . . . in all cases the webs being more or less dusky, and the claws darker still." (*Hume.*)

Length 15 to 17 inches, tail about 2·8, wing 7·6 to 8·0, tarsus 1 to 1·2, bill from gape 1·8.

"Length 15·9 to 16·25 inches, expanse 25 to 27·25, wing 7·4 to 8·1, tail from vent 3·3 to 3·8, tarsus 1 to 1·3, bill from gape 1·75 to 1·92. Weight 10 ozs. to 1 lb. (commonly about 13 ozs.)." (*Hume.*)

Width of bill at gape ·52, at tip ·62 inch.

Female.—Above dark brown, all the feathers with pale margins, except the crown, which is rather richer than elsewhere and centred darker; chin and throat white; neck greyish or buffy-white, with all the feathers minutely streaked with dark brown; a superciliary stripe from above the eye and a spot on the front of the lores white or buffy-white; wings greyish-brown, in old females more grey, especially on the smaller coverts; speculum as in the male, but very blurred and indistinct; fore-neck and upper breast dark brown, with broad pale edges to the feathers; lower breast, abdomen, and vent white, buffy-white, or buff; the flanks, sides, and under tail-coverts the same, splotched, barred, and spotted with brown.

The colours of the soft parts the same as in the male.

"In some females the bill is similar" (to the males); "in some, apparently adult, it is a blackish plumbeous above, dull plumbeous below." (*Hume.*)

Length about 15 inches, wing about 7·25, tail 2·6, bill from gape 1·7, tarsus 1, bill at base ·51 broad, at tip ·60.

"Length 14·8 to 15·5 inches, expanse 23·0 to 25·5, wing 7 to 7·3, tail from vent 2·9 to 3·5, tarsus 1·0 to 1·15, bill from gape 1·7 to 1·85. Weight 9 to 14·75 ozs. (commonly about 12 ozs.)." (*Hume.*)

I have a female in my collection which weighed 1 lb. 1 oz., and has a wing of 7·65 inches.

The young males are similar to the female, but are darker, have more brown on the underparts, the speculum is more defined, and the coverts a purer grey.

Males in moulting or post-nuptial plumage resemble the females, but have the wing, not the scapulars and innermost secondaries, of the usual colour.

“**The downy nestling** resembles that of the Mallard, but is smaller, and has a broad unbroken buff streak above the eye and a well-defined dark streak through the eye.” (*Yarrell*.)

The general habitat of the Garganey may be said to be the Palearctic Region, an Eastern not Western form; it has been obtained in North America and Greenland; but its home is Northern Europe and Asia in the summer, and Southern Europe, Northern Africa (as far south as Shoa, Somaliland), and Southern Asia in the cold weather.

Outside India in the winter it is to be found throughout Southern Europe and Northern Africa, very common in Egypt, through Asia Minor and Arabia, Persia, Afghanistan, Southern China, Japan, the Philippines, Borneo, Java, &c.

In Japan, Seebohm says: “The Garganey is a winter visitant to all the Japanese Islands, but appears to be nowhere common.” Hose and Everett both obtained specimens in the Borneo Islands, but it would appear to be a rare straggler there.

In India it occurs practically everywhere, from the extreme north to the extreme south. As regards its distribution in Ceylon, Legge says: “Found in the extreme north about the Jaffna peninsula, on the swamps of the island of Delft, and on the west coast down to Manaar during the cool season from November to March. Layard speaks of its occurring in ‘vast flocks’ at the head of the Jaffna estuary; but I do not think it is so common now-a-days.”

It extends throughout Burmah, but is absent in certain portions. Hume says that it is not obtained in Tenasserim, but it has now been frequently recorded thence. It is common in parts between the Sittang and Salween, and extends west of the former river. Oates records that it is found throughout the Shan States, at least as far as Kentung, where Lieut. J. H. Whitehead has shot it. It does occur in Kashmir, and has been, since Hume wrote in ‘Stray Feathers,’ recorded from that State on various occasions.

It would seem that in the extreme north and north-west the Garganey is perhaps the earliest of ducks to arrive in India, but further east it is quite a toss up as to whether the Common Teal or the Garganey first puts in an appearance. On the whole, I should think the Common Teal is the earlier of the two.

Even in the west the Garganey is not always the first, the Common Teal being sometimes the first recorded.

It is very noticeable that, though in migrating south the birds once in India take long to work further down the Peninsula, yet they work north very speedily.

In Northern India they arrive in September, and have even been seen as early as August, but, according to Theobald and others, they do not get to Southern India before December. Leaving, however, they delay until March and April, much the same time that they leave all portions of their winter home, though everywhere a few stay through May and even into June.

As regards the numbers they arrive in, Hume's notes on his enormous bag at one time shows what may be sometimes seen. He writes:—"I have a special note of having found a flock, which I estimated to contain twenty thousand individuals, at Rahun in the Etawah district, on the 28th August, 1865. Never before, or since, have I seen so huge a body of fowl of one kind, and I have noted that I have bagged forty-seven of them besides losing at the time many wounded birds (I had no dogs with me) in the rushes. I had sent my gun-punt (built exactly on the lines of one of our Norfolk boats) a few days previously out there to see that it was alright for the coming season, and I had taken with me a small but heavy Monghyr-made swivel-gun, carrying only 8 ozs., to try. To my surprise I found the thickest body of fowl—on the open part of the jhil—I had ever seen. I loaded the swivel with No. 4 shot and worked up quite close to some of them, and within some fifty yards of the main body, when seeing they were all about to start, I fired and knocked over at least sixty, I actually secured forty-seven."

This was thirty-five years ago, and I fear that flocks like this one are things of the past, though they may now and then be met with in very vast flocks. All through the Sunderbunds, and again on the Chilka Lake, they are often to be seen in flocks of thousands, and in Oudh, the North-West, and Sind such flocks are by no means rare.

As a rule, over most of its north and north-western range, the flocks may roughly be said to average somewhere about and between one to two hundred. To the east, I think, they average smaller, and would put it somewhere between fifty and a hundred. Small flocks of five or six, or even ten or twelve, are not, I think, at all commonly met with, while pairs and single individuals are hardly ever seen.

The Garganey haunts almost any kind of water, not, as *a rule*,

frequenting small, quick-running streams, or small clean tanks and ponds, and being specially partial to wide stretches of fen or bheel, well covered over their greater extent with weeds, yet having fairly extensive patches of clear water dotted here and there over their surface.

During the day they keep almost entirely to the larger sheets of water or, sometimes, to the large rivers, such as Indus, Ganges, &c., where they float in the centre in dense, closely-packed masses. This manner of packing is very characteristic of the Garganey, and they keep more closely together than does any other kind of duck; even when flying they do not straggle much. They feed in the smaller tanks and jhils, and also in the paddy-fields, and on various young land-crops. Hume says that in some parts of India they visit the paddy-fields in such numbers that on one visit *acres* of paddy are destroyed. Their staple diet is vegetarian, and of vegetable matter the staple articles are rice, both cultivated and wild, and the young leaves and shoots of various water-plants. They also eat various kinds of reeds, roots, &c., and such animal matter in the shape of worms, snails, and shell-fish, &c. which force themselves on their notice.

Hume describes well the sound of their flight thus:—"Whether it is only because one habitually meets them in such large flocks, or whether it is really peculiar to them, I do not know; but certainly one associates the overhead flight of this species with the surging hiss, more even, sustained, and rushing than that of any of our other ducks. Anyone who has stood under heavy round-shot fire knows the way in which shot hurtle up to you crescendo, and die away as they pass; and just in this way (though the sounds are in a wholly different key) does the swish of a large flock of Garganey surge up to you in the middle of the night, and die away as they pass."

I do not think that it is because the birds are numerous or familiar that we think the sound distinct from that of other birds' flight. I remember when first introduced to the Garganey how I was struck with the pattering swish of their flight, and then noticed how like a whistle it rose and fell as it approached and vanished. Their flight is but little, if at all, inferior to that of the Common Teal, though more direct, the flights seldom indulging in the swift dodgings and swervings of that bird. Shooting over the vast Jessore bheels in boats, which went in a thinly scattered line through them, the difference between the flight of the two species was well shown. The Garganeys rose far ahead, swept round but once in a wide semicircle, and then went straight ahead, whereas the Common Teal often dodged in and out down the whole line, circled about

two, three, or more times, and then disappeared, but often only to settle half a mile or so further on. The Garganey also rose quicker off the water, getting up obliquely, and were quicker away ; again, when wounded they swam faster away than the Common Teal, and though by no means first-class divers, yet they were good enough to be able often to escape us by this means.

As to whether they are wild or tame, opinions seem to differ very much. Theobald says : "They are not very hard to shoot, and are easily approached behind a small screen of green boughs ; sometimes a paper kite, made in the shape of a hawk and flown over the tanks, keeps the Teal together, and they will not leave the tanks though fired at often." Dresser, speaking of the Garganey in Europe, and quoting Baron Droste, actually says : "They are very tame, and soon get accustomed to the sight of human beings." Reid says that they are shy and wild when they first arrive (in Lucknow), but afterwards become tamer. Hume says that they are never tame and generally decidedly wild. As far as my experience goes, I have found that the Garganey is one of the wildest of the duck tribe ; even when the would-be shooter keeps behind screens, &c., they seem to be very cute, and to be able to discern what is behind the screen quicker than many others of their kind, and they are not slow to profit by what they can discern.

Then, too, they keep much to fairly open water when resting, and a sudden appearance of a detached clump of weeds floating towards them at once puts them on the *qui vive*, and long before the clump gets within shooting distance, two out of three times they leave for safer abodes.

I once, however, came on a flock of these little birds who stuck more persistently to their ground, or water, than any other flock of ducks it has been my fortune to meet. This was in the district of Hazaribagh, and I was going from Giridi to Hazaribagh in a *push-push*, a sort of four-wheeled, inferior, springless brougham, when I saw a flock of about forty Teal on a tank close by the road. I got out of the *push-push*, walked up to the tank, and got two birds with a right and left as they rose ; the birds wheeled round and I got a third ; they then went to another tank 600 yards away, and, as I followed them up, again rose and returned to the first piece of water, leaving a fourth bird with me. I, too, went back and got yet another brace, and after these yet another bird on the second piece of water, and when I left with seven Teal the rest were already back on the tank by the road. This was, of course, in a badly watered part of the country, but on no other

occasion, whether there was water in abundance or not, have I ever known Garganey remain to have more than a right and left fired at them.

They are very silent birds as a rule. Hume speaks of them chattering, like all other ducks in confinement, on the slightest provocation, but their ordinary note, a loud strident quack, is very seldom used when the birds are in a state of nature. Seebohm considers their voice to be "not quite so loud as a Mallard, but is in a slightly higher key; it may be represented by the syllable *Knake*. It is generally uttered singly, but sometimes repeated twice. The quack is common to both sexes, but in the breeding-season the male utters a harsh grating note resembling *kr-r-r*."

The food of the Garganey is both vegetarian and animal, and it subsists much on surface buds of water-plants, and shoots of such as run along the surface of the water. It, however, also eats water-insects, worms, and similar food.

As regards the breeding of the Garganey within Indian limits, there is practically no evidence of any value.

Colonel Irby told Hume that when in Oudh he caught some young *half-fledged* in the month of September. This shows, of course, that once upon a time a pair of Teals did remain in India and bred, but it does not at all show that Teals ever stay *of their own accord* to breed. This unfortunate pair had very likely been slightly damaged by shot or accident, and so were unable to take the exertion of migration; and this, doubtless, is the reason for the many Teal staying in India, and being seen in various months, when they should have been far away and breeding in other climates and countries. They have been seen in practically every month in the year, and such records are many; but, as I have said elsewhere, every year millions are killed, and it would be strange indeed if a few did not get injuries from which they recovered, yet not sufficiently soon to allow of their migrating.

Colonel Tickell wrote from Moulmein mentioning a young bird just fledged which had been caught on a small pond in the vicinity. This may have been a young bird, backward and rather weak, and consequently so exhausted with its long journey as to be caught and produced as a specimen locally bred, or it may have been one bred under the circumstances already suggested.

Blyth wrote, in reference to this statement of Tickell's: "The Garganey breeds sparingly, no doubt, in India, as well as in Burmah and Tenasserim"; but from what this deduction was made I cannot tell, nor can I find any perfectly authentic records of the Garganey breeding in

India, beyond the circumstantial evidence given by Colonel Irby's young birds.

They breed throughout the north temperate zone in Europe and Asia. In the former continent they breed as far south as France, North Italy, Greece, and throughout the Balkan States and Russia into Asia; in parts of Asia Minor, South Siberia, Manchuria, Amoor, and Northern China, but not in Japan, as far as is yet known.

They desert the larger open pieces of water during the breeding-season, and resort to smaller pools and ponds, fens and bogs, rarely the mossy and weed-covered borders of streams, and yet more rarely the reed-fringed shores of lakes, &c.

Although so commonly found on the sea-coast and on salt-water creeks and on tidal waters, yet the Garganey seems always to breed inland, and I can find no record of their nests and eggs being taken in such places.

The nest is the usual mass of weed, reeds, and soft vegetation made by most ducks; and it is said that occasionally they are made of sticks and twigs, but this, I imagine, is very exceptional.

The lining of down and feathers varies much: in some it is very dense and copious, in others very scanty; normally it is neither the one nor the other, rather scanty, however, than otherwise.

The nest is most often placed in some thick tuft of coarse grass, bed of reeds, or tangle of shrubs and grass in fen land, or on the borders of some vegetation-covered piece of water. The eggs vary in number from six to thirteen, the number most often found being from eight to ten.

Morris gives the number laid as eight to ten or even fourteen. According to him, incubation lasts twenty-one days, and the young birds follow their mother to the water as soon as hatched.

The eggs, at least all I have seen, were quite indistinguishable from those of the Common Teal in shape, texture, and size, and I think in colour. Hume says that they have perhaps a more yellow creamy tinge, and though a few may be more buff or yellow in tone than any of that bird, many are no deeper at all.

Dresser gives the average as 1.87×1.35 inches; those in my collection average 1.82×1.36 , making them out to be rather shorter and rather broader.

Genus SPATULA.

The genus *Spatula* is distinguished from all other genera, except the Australian *Malacorhynchus*, by the shape of the bill, which is broadly spatulate, being about twice as broad at the subtip as it is at the base. There are four species, whose range is practically cosmopolitan; but only one is represented in India, viz. the Common Shoveller.

The lamellæ are very long, thin, and prominent, and the edges of the upper mandible are much turned down on the terminal quarter.

The tail-feathers number 14 in both sexes.

(33) SPATULA CLYPEATA.

THE SHOVELLER.

Spatula clypeata, Jerdon, *B. I.* iii, p. 796; Hume, *Str. Feath.* i, p. 260; Adam, *ibid.* p. 402; Butler, *ibid.* iv, p. 28; Scully, *ibid.* p. 199; Fairbank, *ibid.* p. 264; Ball, *ibid.* vii, p. 232; Hume, *ibid.* p. 492; *id.* *Cat.* no. 957; *id.* *Str. Feath.* viii, p. 115; Scully, *ibid.* p. 362; Legge, *B. of Cey.* p. 1086; Hume & Mar. *Game-B.* iii, p. 141; Vidal, *Str. Feath.* ix, p. 92; Butler, *ibid.* p. 437; Reid, *ibid.* x, p. 80; Davidson, *ibid.* p. 325; Hume, *ibid.* p. 417; Macgregor, *ibid.* p. 472; Barnes, *B. of Bom.* p. 401; Hume, *Str. Feath.* xi, p. 343; Salvadori, *Cat. B. M.* xxvii, p. 306; Blanford, *Fauna B. I.* iv, p. 452; Oates, *Game-B.* ii, p. 246.

Description. **Adult male.**—Whole head and neck glossy green, showing a purple tinge in certain lights, especially on the upper parts; upper breast, lower neck, outer scapulars, and outer portion of upper back mauve-white; a narrow centre patch from the neck brown, the feathers edged pale, in fine specimens with broad white edges; back brown, the feathers pale-edged; rump and upper tail-coverts black, glossed with peacock-green and blue, the former tint predominating; rectrices brown, edged white, increasingly broader on the outer ones; lower breast, flanks, and abdomen rich rufous-chestnut, some of the feathers on the posterior and interior flanks lighter and vermiculated with brown; thighs the same but duller; sometimes a few black spots on the breast; wing-coverts a beautiful blue-grey, some of those next the inner secondaries glossed Prussian blue on the terminal quarter of the outer web; greater coverts more brown and edged with white, forming a wing-bar next the speculum; one of the outer



THE SHOVELLER.
Spatula clypeata

scapulars brilliant grey-blue, others black glossed with green and with white centres; tertiaries deep brown-black, glossed with green, turning to blue at the tips; quills dark brown; speculum a brilliant metallic green; under tail-coverts black, glossed with blue-green; flanks next tail-coverts white.

Bill black; legs orange, claws horny brown; irides yellow, orange, or orange-red.

"In the male in winter the bill is black, usually with a greyish shade; in some it may be called leaden dusky. In November, when they first arrive, and in the case of birds of the year until much later, the bills of the males are like those of the females.

"The irides vary, as a rule, in the male from yellow to reddish-orange, but I have recorded them as brown in two or three males.

"The legs and feet vary from orange to Indian or tile-red and are usually brighter coloured in both sexes in the spring, and at the same season in the male than in the female. The webs are often dusky towards their margin." (*Hume.*)

Length about 20 inches, wing 9·3 to 9·8, tail about 3·5, bill from gape about 3, tarsus 1·4.

"Length 19·7 to 21·75 inches, expanse 29·75 to 32·5, wing 9 to 9·8, tail from vent 3·6 to 4, tarsus 1·2 to 1·5, bill from gape 2·95 to 3·05. Weight 1 lb. 3 ozs. to 1 lb. 14 ozs." (*Hume.*)

After the breeding-season the male assumes the plumage of the female, but may always be distinguished by the speculum on the wing, generally darker, less marked upper parts, and the plain dark upper tail-coverts.

Blanford says: "It is rare in India, so far as my experience goes, to see a male in full plumage before the end of February"; but I should note that I have a male in splendid plumage shot in November.

Female.—The whole upper plumage brown, each feather edged with pale rufous or dirty rufous-white; wing-coverts grey; quills brown, with faint traces of the speculum, and the white terminal bar to the wing-coverts well defined. Lower parts dull brownish-buff, varying a good deal in depth and tint, the brown bases to the feathers showing through in dark crescentic bands on breast, flanks, and sides, but not at all, or only slightly, on the abdomen; chin immaculate; neck and sides of head speckled with dark brown.

Most ducks, but not all, have a well-defined white loreal spot speckled brown.

Irides brown or orange-brown; legs like those of the male, but duller at all seasons; bill dull brown, the lower mandible dull orange or orange-brown.

"In the female, the upper mandible is dark brown, tinged reddish along the commissure and on the nail, while the lower mandible is dull orange, brownish towards the tip.

"The irides vary in the female from brown to reddish-brown, but I have recorded them as light yellow in one female, so that there is only a general, and not a constant, sexual difference in the colour." (*Hume.*)

Length about 18·5 inches, wing 8·1 to 9·2, tail about 3·5 or less, tarsus 1·2 to 1·4, bill from gape 2·8.

"Length 18·0 to 19·0 inches, expanse 27·0 to 29·5, wing 8·0 to 8·9, tail from vent 3·5 to 3·85, tarsus 1·2 to 1·4, bill from gape 2·65 to 2·87. Weight 1 lb. to 1 lb. 7 ozs." (*Hume.*)

Male in first plumage resembles the female, but the wings are brighter coloured ; bill pale reddish-brown ; legs and feet flesh-coloured.

Males in their post-nuptial plumage have the white of the breast with a few dark crescentic bands, the lower belly with dark bars, and the rich black of the under tail-coverts mottled with chestnut and white.

“ **Young in down** resemble those of the Wigeon in having the upper parts almost uniform, with indistinct pale spots, but they possess the dark brown stripe through the eye as in the young Mallard. The bill is not widened at the tip, but it grows very rapidly.” (*Salvadori*.)

The Shoveller is to be met with at different times throughout the Northern Hemisphere in all four Continents. Found over practically the whole of Europe and Asia at various seasons, it extends in winter as far south as Somaliland in Africa, and in America to the 18th degree latitude north in the West Indies, and even further south in Guatemala.

The references made to its occurrence in Australia and South America apply to allied species and not to the Common Shoveller.

In India proper the Shoveller is a winter visitant to all parts, from the extreme north to the extreme south ; but, though it surely must occur there at times, it has not yet been recorded from Pegu and Tenasserim.

In Ceylon it is also fairly common. Legge writes :—“ This remarkable and almost cosmopolitan Duck is a not unfrequent winter visitor to Ceylon. I have not met with it myself, but Mr. G. Simpson informs me that it comes in large numbers to Delft and the Palverainkadoo and Mullaittivu lagoons, remaining during the same period as the Teal and Pintail.”

The Shoveller is not one of the earliest ducks to arrive ; as a rule it comes into the more northern portions of India in the latter end of October or even early in November, and is later still in the southern parts of its range. In Bengal, I think few are seen until November ; in Assam, especially in the extreme N.E., I have seen them in October.

It leaves, as well as arrives, later than many ducks, and may often be met with in Cachar during April ; and Hume says that some remain in the Peshawar Valley until May, and that in Kashmir they remain until quite the end of that month. Lieut. White also obtained one in the Kurram Valley, in company of three Gadwall, on the 22nd of the same month.

In the extreme north of its range and in the Himalayas it is only seen whilst on migration, during the months of late September and October and early November, and again in March and April, as the birds go north.

In Kashmir, however, a good number pass the whole of the winter, and Adam says that it is found throughout the whole winter there.

Although common over the major part of the country it visits, it does not seem anywhere to be found in very large numbers, and may often be seen in pairs or even singly. I do not remember ever seeing a flock which numbered over forty, and should imagine such a flock to be rare anywhere.

As regards its haunts, these are everywhere and anywhere ; but it does not care for open, deep water, and prefers small creeks, ponds, jheels, and tanks which are well covered with vegetation, and also stretches of shallow water with plentiful cover and a muddy bottom. At the same time, I *have* shot them in the very centre of large open bheels, and once on a small hill-stream.

Hume says :—"To the shores they stick, into the open water they never seem to straggle by choice ; and if you watch them, they are for the most part either dozing on the brink, or paddling slowly in the shallows, with their entire bills and more or less of their heads under water, their heads working from side to side all the while like a Flamingo's or Spoonbill's."

I have, however, seen the Shoveller in open water, but this only rarely, and only during the heat of the day, when the birds wish to sleep.

As noted above by Hume, they feed with bills and heads under water, running the former through the shallows in the mud, and so collecting the numerous small forms of animal life which there abound, and which, when the bill is lifted, are retained whilst the water filters out. They are omnivorous, and will eat almost anything, but, at the same time, animal food undoubtedly forms the major portion of their diet.

Except for the very handsome appearance of the full-plumaged drake, the Shoveller is worth little from any point of view. As an edible, they are one of the worst of the duck tribe—coarse, oily, and fishy in taste, and ranking equal to the White-eye, and inferior to the Whistling-Teal.

As regards their feeding and its quality, Hume writes :—"Doubtless, in more savoury localities, such as the more aristocratic ducks frequent, insects and their larvæ, worms, small frogs, shells, tiny fish, and all kinds of reeds and shoots of water grasses, rushes, and the like constitute their food ; but where they take up their abode on one of the village ponds, and the pond is a real dirty one, I can assert, from the examination of many recently killed birds, that it is impossible to say what these birds will not eat.

"All ducks are more or less omnivorous, but no other duck will, as a

rule, frequent the dirty holes in which a pair of Shovellers often pass the winter."

A curious note on its food, &c., is that in Latham's 'Synopsis of Birds,' in which he states :—"Its chief food is insects, for which it is continually muddling in the water with its bill. It is also said to dexterously catch flies, which pass in its way over the water. Shrimps, among other things, have been found in its stomach on dissection."

It is a bad swimmer and a worse diver, and once shot takes little trouble to bring to hand if only wounded. It flies, however, very well and strongly, and in this respect it holds its own with Teal and other swift ducks, though it is slow to rise, getting up heavily and awkwardly off the water and taking time to get up its speed.

They are very sociable birds, and consort with Teal, Gadwall, and other ducks. As a rule, they are very tame and can be easily approached, if the least caution is taken, and they have the reputation of allowing repeated shots to be fired at them before a flock will leave the piece of water they are frequenting.

Blanford remarks that it never appears to feed, like other ducks, with its head and breast immersed and its tail sticking up vertically.

It is said to walk well, with a carriage similar to that of the Gadwall, and Hume says it can even run if sufficient inducement be held out for it to do so.

Newton remarks on a peculiarity of this duck of "swimming round in circles, with its bill in the water, above the spot where Pochards are diving and feeding beneath, and sifting out the substances that float up when disturbed by the operation of the diving ducks."

The voice of the Shoveller is much like that of the Mallard, the quack, however, being lower and less strident. In flight it gives vent to a low chuckling quack, quickly repeated, much as does the Gadwall.

As regards their breeding in Indian limits, all I can find is Layard's record noted by Legge :—"Layard not only discovered it one year near Jaffna, but found it breeding there at the Chavagacherry lagoon in March. He there met with a female with twelve young ones, most of which he captured, and in the month of November he obtained specimens from native shooters."

This, of course, was an abnormal breeding incident in every way, time as well as locality, and it is very hard to give any reason for such a queer occurrence.

They breed throughout their northern habitat—Asia, America, Europe—

and also in parts of Northern Africa. They are said to breed very extensively in Abyssinia and also in Algeria. In Asia it breeds in Turkestan, Northern Persia, and in the whole of its Northern Asiatic range. In Europe it breeds over the greater part of the Continent, though absent in some countries and present in others quite as far south.

It makes a rather large, loose, and untidy nest of soft reeds, rushes, &c., lined with down, and places it on the ground in swampy land or by the edge of some piece of water in fen land. It does not appear to frequent other water *even* for the purposes of breeding, and selects places well away from observation and interference, and conceals its nest with great care. Hume says that the nest is a shallow depression in the soil made by the birds, and thinly or thickly lined with down or dried grass.

The description of the down with which the nest is lined, and which is, of course, taken from the bird itself, is said by Legge to be "small, dark brown, with small plainly-defined whitish centres."

The eggs vary in number from seven to sixteen, eight or nine being perhaps the number most often laid.

The colour is a pale, but rather clear-tinted, yellow stone-colour; some have a creamy tinge, and others are slightly greenish, but a yellow-grey is undoubtedly the most common colour.

The texture is extremely fine and close, with a surface slightly or decidedly glossed. My eggs average 2.06×1.4 inches, and are in shape rather long ovals, distinctly pointed at the smaller end.

Hume's series measured from 2.0 to 2.2 inches in length and from 1.33 to 1.55 in breadth.

Genus MARMARONETTA.

The genus *Marmaronetta* contains a single species only, with a bill similar to that of *Nettion*, but differing from that genus in having no wing-speculum. Its coloration, which gives a silvery-grey tone to the plumage when taken as a whole effect, is quite sufficient to at once distinguish it from all other ducks, either Indian or otherwise.

(34) MARMARONETTA ANGUSTIROSTRIS.

THE MARBLED DUCK.

Querquedula angustirostris, *Hume, Str. Feath.* i, p. 232; *Anderson, ibid.* iii, p. 273; *Butler, ibid.* iv, p. 30; *id. ibid.* v, p. 234; *Hume & Mar. Game-B.* iii, p. 237; *Reid, Str. Feath.* x, p. 82; *McLeod, ibid.* p. 168; *Hume, ibid.* p. 174.

Chaulelasmus angustirostris, *Hume, Str. Feath.* vii, p. 493; *id. Cat.* no. 961 bis; *Barnes, B. of Bom.* p. 405; *Hume, Nests & Eggs (Oates ed.)*, iii, p. 291; *Barnes, Jour. B. N. H. S.* vi, p. 291.

Marmaronetta angustirostris, *Salvadori, Cat. B. M.* xxvii, p. 321; *Blanford, Fauna B. I.* iv, p. 454; *Oates, Game-B.* ii, p. 273.

Description. Adult male.—Whole upper parts a silvery grey, each feather having the central portion darker and brownish and the tip and terminal edge paler; the head and nape is more buff in tint, and has each feather centred brown, giving it a barred appearance; the parts surrounding the eyes brown, forming a distinct dark brown eye-patch; chin, throat, and under part of the neck paler, almost white, with the dark centres much reduced and forming only a stippling; lower parts white, more or less tinged with buff and grey, and also barred with dark grey-brown on the breast, flanks, and sides, and less distinctly on the lower tail-coverts. Tail a silvery brown-grey, edged paler; wings silver-grey, the outer secondaries a purer, paler colour, and the inside of the primary-quills darker and brown; all the feathers, coverts, and quills have the shafts brown, distinctly showing against the grey.

“Length 18·3 to 19 inches, expanse 28·5 to 29·5, tail from vent 3·6 to 4·0, wing 8·1 to 8·5, wings when closed reach to 0·7 to 1·5 of end of tail, bill at front, including nail, 1·77 to 1·85, tarsus 1·44 to 1·52. Weight 1 lb. 3 ozs. to 1 lb. 5 ozs.

“The legs and feet are dusky-olive or dark horny-brown with the claws and



THE MARBLED DUCK.
Marmaronetta angustirostris.

J. Green, Chromo.

webs black, or horny-green with the webs and claws dark grey ; the bill bluish-grey, black on the culmen and tip or dusky, bounded at the margins of the feathers on the forehead and cheeks with a pale leaden-blue line, continued along the margins of both mandibles to near the tip, and a spot of the same colour just above the nail ; the irides are brown." (*Hume.*)

Female.—Only differs from the male in being smaller, having the eye-patch less pronounced, and the general plumage duller and more uniform in colour, and the crest also is less developed.

"Length 16·9 to 17·5 inches, expanse 27 to 28, tail from vent 2·8 to 3·7, wing 7·9 to 8·1, wing when closed reaches to within 0·5 to 1·0 of the end of the tail, bill at front 1·6 to 1·75, tarsus 1·4 to 1·5. Weight 1 lb. to 1 lb. 3 ozs." (*Hume.*)

"Length 15·75 inches, expanse 26·5, wing 7·62, tail from vent 2·75.

"Legs and feet greenish plumbeous ; irides dark brown ; bill dusky plumbeous, darkest on the culmen." (*Butler.*)

Young.—"Similar to the female, but all the markings and tints still duller ; the lower parts almost uniform dull pale greyish." (*Salvadori.*)

A young female obtained by Major Olivier, and now in the Bombay Natural History Society's collection, has the wing only 7·42 inches, but at the same time has the bill about 1·8.

The range of the Marbled Teal extends from the countries to the west of the Mediterranean Sea, through those bordering it north and south into Western Asia, India being its eastern limit ; it is also found in the Canaries.

As regards India, little has been recorded about its habitat since Hume wrote in 'Game-Birds' :—

"Its normal range with us (it is presumably only a cold weather visitant) appears to be the whole of Sind (from every Collectorate in which it has been recorded, and where it is extremely common) and Northern Guzerat, the southern part of the Dehra Gazi Khan district and of Bhawalpur, in all three of which it is a regular but less abundant visitant. No doubt it will be met with in Kutch and Kathiawar, but it has not been thence recorded as yet.

"But outside these limits it occurs much further east as a straggler. I have had specimens from Western Oodeypore and from near Delhi. The late Mr. A. Anderson procured it in the North-West Provinces, at Futtehgarh, and in Oudh near Hurdui ; and I myself procured two freshly killed specimens in the Calcutta market, the one in December and the other in February, which had been captured about twenty-two miles south-west and some eighteen miles west, respectively, of the metropolis."

Since this was written the Marbled Teal has been obtained in Kutch.

several times again about Delhi, and more than once also in the Calcutta market, but nothing has been recorded, that I can find, which in any way extends the original area as given by Hume. A specimen lent me from the Bom. Nat. Hist. Society's collection has no locality given on its ticket, but was presumably collected in one of the places above mentioned.

I should note that when showing this specimen to a friend, he at once said that he had shot two birds of the same kind in Gowhatty, Assam : he said that neither he nor any of the men to whom he showed them had ever seen the duck before and could not name it. He was very sure of its being the same species.

In its arrival it appears to be later than most ducks, even in its extreme north-west point of entry ; it does not appear to be seen in any numbers until late in October or early November, and as it works south and east it, of course, gets later and later. Its departure would, on the other hand, seem to take place at much the same time as that of other birds of its order, *i. e.* in April, a few remaining until the last few days of May in very late years.

Little has been added to our knowledge of the habits of this Teal since Hume wrote concerning it as follows :—

“In Sind, where I had abundant opportunity of observing it, I found the Marbled Teal invariably associated in large parties. Its favourite haunts were broads, thickly grown with rush, in which it fed and sported, comparatively seldom showing itself in the open water. As a rule, it does not at once rise when guns are fired, as the other ducks do, but if by chance it is at the moment outside of the rushes or similar cover in the open water it scuttles into concealment as a coot would do, and if in cover already, remains there perfectly quiet until the boats push within 60 or 70 yards of it ; then it rises, generally one at a time, and, even though fired at, not unfrequently again drops into the rushes within a couple of hundred yards. When there has been a good deal of shooting on a lake and almost all the other duck, and with them, of course, *some* of these, are circling round and round, high in the air, you still keep, as you push through the reeds and rushes, continually flushing the Marbled Teal, and the broad must be small, or the hunting very close and long continued, to induce all the Marbled Teal to take wing. Of course, where there is a little cover (though there you never meet with this duck in large numbers) they rise and fly about with the other ducks, but their tendency in these respects is rather coot-like than duck-like. Individuals may take wing at the first near shot, but the great majority of them stick to cover as long as this is

possible ; and on two occasions I saw very pretty shooting, boats in line pushing up a wide extent of rush-grown water, and the Marbled Teal rising every minute in front of us at distances of sixty or seventy yards, like Partridges out of some of our great Norfolk turnip-fields ; here and there a Shoveller or a White-eyed Pochard, both of which, when disturbed, cling a good deal to cover, would be flushed, but there was not one of these to ten of the Marbled Teal. The flight of this species, though Teal-like, is less rapid and flexible (if I may coin an expression to represent the extreme facility with which that species turns and twists in the air) than that of the Common Teal. It more nearly resembles that of the Garganey, but is less powerful, and less rapid even than that of this latter species. There is something of the Gadwall in it, but it wants the ease of this. It flies much lower, too, and, as already mentioned, much more readily resettles after being disturbed. I have hardly ever seen them swimming in the open, and in the rushes they make, of course, slow progress. When wounded they dive, but for no great distance, and then persistently hold on under water in any clump of rush or weed, with only their bills above water. I have never seen them on land in a wild state, but some captured birds, whose wings had been clipped, walked very lightly and easily ; and though they had been but a few days in confinement, they were very tame, and could, I should imagine, be easily domesticated.

“In Spain, they are described as very wary, and there they seem to frequent open water ; here they avoid this latter as a rule, and are, I should say, amongst the tamer of our ducks.

“Their food is very varied here. Favier says that, in Tangiers, they feed on winged insects ; in Sind, the major portion of their food consists of leaves, shoots, rootlets, corms and seeds of aquatic plants, intermingled with worms, fresh-water shells, insects of all kinds and their larvæ. I believe I found a small frog in the stomach of one, but it is not noted on the tickets of any of the specimens now in the Museum, and I cannot be quite sure.”

Its voice has been variously described as a whistling croak, a low croaking whistle, a rather hoarse quack, and a quack like that of the domestic duck, but very harsh and abrupt. It is probable that these descriptions apply to two notes, and that this duck, like some others, has two distinct calls, one more or less of a whistle, the other somewhat of the nature of a quack.

Its food is practically omnivorous, and as an article of diet itself it is not first-class.

Mr. B. Alexander found it breeding plentifully in the Cape Verd Islands, and it appears to breed on the greater portions of its habitat round the Mediterranean. Although breeding in latitudes so far south, it is unusually late in breeding, May and June being the months in which the eggs are laid. It is said to make a rough nest, much like that of the Common Teal, and to place it amongst rushes on land surrounding swamps and various kinds of water, and also on the sea-shore, this last more especially in Spain. Of this latter country Col. Irby thus records their nesting in Andalusia :—"The Marbled Duck breeds during the last week in May, nesting in patches of rushes. The nest is like that of a Teal, containing a good deal of the down from the breast of the female; and 11 eggs appear to be the usual complement. The latter much resemble those of the Common Teal, being of a yellowish-white colour. Favier states that (near Tangiers) they also nest in rushes during May and June, and that incubation lasts from 25 to 27 days."

The eggs which Col. Butler received from the Mekran Coast are, in all probability, rightly identified by him as being those of the Marbled Teal. He says :—"I received some small duck's eggs from the Mekran Coast, which are in my opinion those of the Marbled Duck. The nest was on the ground under a solitary babool bush, growing on an extensive tract of salt marsh, some seven or eight miles north of Ormarra, called Moorputty, and consisted, according to the account of the native who found it, of a collection of fine twigs formed into a solid pad with a few pieces of down as a lining, and measuring eight or nine inches in diameter.

"The eggs, eight in number, and of a delicate cream-colour, were taken on the 19th June, 1878. I have carefully compared them with eggs of the Marbled Duck, and find that they agree exactly, both in size, colour, and texture. They are certainly not Garganey's eggs, being too large; I know of no other duck inhabiting that district they could possibly belong to except the present species.

"They vary in size from 1·8 to 1·9 inches in length, and from 1·35 to 1·43 in breadth."

Barnes, in his article on "Nesting in Western India," noted that he, too, had received some eggs from the Frere Museum which had come from the Mekran Coast about the same time as those received by Colonel Butler. He describes them as being of a creamy white, much soiled and dulled by lapse of time, but he does not give their dimensions.

Subfamily FULIGULINÆ.

This subfamily is divided from those already written about by having the hind toe broadly lobed, whereas the latter have the hind toe either with no lobe at all or else with only a narrow one. Blanford does not divide the Fuligulinæ from the Anatinæ, but the division seems to be a natural one, the members of this subfamily differing from those of others, not only in construction, but considerably in habits as well.

The separation of *Erismatura* is by no means so distinct, and the genus is not, in my opinion, worthy of separation from the Fuligulinæ and the honour of a subfamily to itself. Having, however, consistently so far followed Salvadori in his classification, it is better, perhaps, for the sake of uniformity, not to differ from it here.

Erismatura differs from those ducks included by Salvadori in his subfamily Fuligulinæ in certain external structural particulars, principally in the swollen base to the upper mandible and in its remarkable tail, the which, as Blanford remarks, looks as if it might be that of a Woodpecker.

The Merginæ are separated from all other ducks by the shape of their bill, which is long, narrow, and pointed, altogether most unduck-like in its appearance.

The Fuligulinæ contain thirteen genera, of which four only are represented in India; but it is worthy of notice that whilst *Netta* is one of the most common forms and *Clangula* one of the most rare, *Nyroca* and *Fuligula* contain some forms which are extremely common and others again of the greatest rarity.

Key to Genera.

- a.* Primaries with the bases more or less white.
 - a'.* Lamellæ long and prominent *Netta*, p. 208.
 - b'.* Lamellæ short, well apart, not very prominent.
 - a''.* Bill very nearly the same width throughout . . . *Nyroca*, p. 216.
 - b''.* Bill distinctly wider at the tip than at the base . . *Fuligula*, p. 233.
- b.* Primaries without any white or whitish on the bases . . . *Clangula*, p. 246.

Genus NETTA.

The genus *Netta* contains but one species, distinguished by its bill, which tapers very gradually throughout its length and has the lamellæ very stout and prominent.

The male bird also has a full bushy crest, which, however, does not exist, or is considerably modified, in the female.

The name Pochard should be pronounced "Pokard," not with the soft *ch* with which I have heard many sportsmen sound it. In many parts of England these ducks are known as Pokers or Poke Ducks, and it is from this the name is derived.

(35) NETTA RUFINA.

THE RED-CRESTED POCHARD.

Branta rufina, *Jerdon, B. I.* iii, p. 811; *Butler, Str. Feath.* iv, p. 30; *ibid.* v, p. 234; *Fairbank, ibid.* iv, p. 264.

Fuligula rufina, *Hume, Str. Feath.* i, p. 264; *Adam, ibid.* p. 402; *Hume, ibid.* vii, pp. 98 & 493; *Hume & Mar. Game-B.* iii, p. 253; *Legge, B. of Cey.* p. 1087; *Butler, Str. Feath.* ix, p. 438; *Reid, ibid.* x, p. 84; *Taylor, ibid.* pp. 528 & 531; *Barnes, B. of Bom.* p. 412; *Hume, Str. Feath.* xi, p. 346; *Ball, ibid.* p. 232; *Cripps, ibid.* p. 402; *Hume, Cat.* no. 967.

Netta rufina, *Salvadori, Cat. B. M.* xxvii, p. 328; *Blanford, Fauna B. I.* iv, p. 456; *Oates, Game-B.* ii, p. 299.

Description. **Adult male.**—Whole head reddish-bay, richest and darkest on the under surface and sides, paling from the forehead to the end of the crest, where it is reddish-buff. Neck blackish-brown; upper back dark brown, getting more and more pale towards the rump, the bases of the feathers next the scapulars showing in a white band; rump and upper tail-coverts blackish-brown, more or less glossed green; tail silvery-grey-brown; breast blackish-brown, paling on the lower breast and abdomen; under tail-coverts dark brown; flanks, axillaries, and under wing-coverts white; coverts bordering the wing and running into the scapulars white; other coverts greyish-brown; secondaries white, sometimes tinged grey or creamy, with a subterminal band of brown from 2.5 to 4 inches wide; inner secondaries like the coverts; outermost primary brown on the outer web and inside of the inner web and tip, the remainder white, this



THE RED-CRESTED POCHARD.
Nettion rufina.

white gradually increasing in extent on each primary until the innermost primaries are all white with a broad brown tip.

Bill vermilion-red ; the nail whitish, tinged pink or sometimes yellowish, the base next the feathers of the forehead and the gape more or less dusky brown except in the oldest birds ; legs and feet orange, orange-red, or dull fleshy-red ; irides deep or light reddish-brown to bright light red.

"In the adult male the bill is a brilliant crimson, sometimes inclining to vermilion ; the nail brown or white, tinged with brownish horn, or pink horny brown or yellow at tip. There is often a dusky shade round the nostrils ; the gape is often blackish, as is likewise the base of the lower mandible and the basal portion of the membrane between its rami ; but these are all traces, I think, of immaturity.

"The legs and feet are dingy salmon-colour or reddish-orange, dusky on the joints and blackish on the webs ; but in slightly younger but full-plumaged birds the legs and feet will be olivaceous-orange, or, lastly, dusky with a reddish tinge.

"The irides vary from brown to red (this latter being the colour in the old adult) and are at different ages brown, brownish-yellow, reddish-brown, orange, orange-red, and bright red.

"Length 20·5 to 22·1 inches, expanse 34·0 to 38·2, wing 10·0 to 10·75, tail from vent 3·0 to 4·2, tarsus 1·5 to 1·7, bill from gape 2·3 to 2·42. Weight 1 lb. 12 ozs. to 2 lbs. 14 ozs." (*Hume.*)

Female.—Above pale greyish-brown distinctly tinged with ochre ; the crown rather darker ; scapulars paler ; the feathers of the upper surface with pale margins, practically absent in the older birds ; the wings paler and duller but otherwise like those of the male, the white being replaced by pale grey or dusky white ; whole lower plumage, under wing-coverts, and axillaries pale greyish-white, yellowish-white, or greyish-ochre, darker on the flanks.

Bill dusky black, becoming red towards the tip and with the nail still paler, the lower mandible only dark at the base and up the fleshy part in the centre ; irides brown or reddish-brown ; the webs and joints darker, often dusky black.

"In the female the bill is black, reddish or orange towards the tip and more or less along the sides of the lower and edges of the upper mandible." (*Hume.*)

"Iris yellow ; bill brownish-red above, fleshy beneath, nail brown ; legs and feet murky yellow." (*Legge.*)

"Length 20·1 to 22·0 inches, expanse 33·75 to 37·0, wing 9·0 to 10·25, tail from vent 3·5 to 3·8, tarsus 1·5 to 1·75, bill from gape 2·25 to 2·4. Weight 1 lb. 10 ozs. to 2 lbs. 6 ozs." (*Hume.*)

"**Young male** similar to the female, but the darker centres of the feathers of the underparts are brown instead of grey ; back and breast darker brown ; and more indications of a crest." (*Seebohm.*)

The colours of the soft parts are those of the female, the legs and feet being less tinged with red or orange, often of a uniform dull brown, barely tinged on the shanks with reddish ; the irides are plain brown. The bill becomes redder before the full plumage is assumed, but does not become really red or crimson-red until the bird is practically adult.

“**Males in first nuptial dress** have the underparts more suffused with brown, the white not suffused with pink, and the bill much paler.” (*Seebohm.*)

“**Males in moulting plumage** very closely resemble the adult females, but may be distinguished by the brighter colour of their bills and eyelids, by the greater development of their crest, by the darker brown of the belly and under tail-coverts, and by the redder colour of the feet.” (*Salvadori.*)

“**Young in down** are described by Baldamus as having the upper parts dull olive-grey, with a buff spot on each shoulder, and the underparts buff; a buff stripe passes over each eye, and through the eye runs a dark stripe, which divides into two behind the eye.” (*Salvadori.*)

The habitat of the Red-crested Pochard may roughly be said to be the countries surrounding the Mediterranean and Central Western Asia.

It is common in South Russia, Turkestan, Persia, Afghanistan, Beluchistan, and thence in winter into India. Throughout the countries of Southern Europe it is common, and it ascends north as a frequent straggler to Northern France, England, occasionally as far as Scotland, North Germany (where it breeds), and Central Russia.

On the south coast of the Mediterranean it is much less common. It is rare in Egypt and Tangiers, more common in Algiers, and west of Algiers, after which it has not been recorded further west.

In India, the Red-crested Pochard occurs practically throughout the whole of the North and Central India. It is common in the North-West Provinces, the Punjab, Sind, Rajputana, and Oudh, Central India, and the Central Provinces, except in the south, and the greater part of Bengal. In Assam it is less common, but by no means at all rare. Hume found it in Manipur in small numbers, and I have myself seen, shot, or had it recorded for me from Cachar, Sylhet, and Dacca. In the Sunderbunds I found it decidedly rare, but have had it recorded as common by other sportsmen. In Southern India it must be rare everywhere, and it seems also to be rare in the extreme west, in Cutch, &c. There seem to be hardly any records of the bird in Southern India, but Layard was certain he had met with it in Ceylon, and it doubtless, therefore, must occur at odd times throughout the whole of the Indian Peninsula.

I can find no signed records of its occurrence in Burma, but there are anonymous, though apparently authentic, notes of its having been occasionally found there.

I have had it recorded from Chittagong, where, however, it is said to be very rare.

Although so many of these ducks have their home quite close to India,

yet they are, on the whole, rather late arrivals, coming into the North and North-west India in the latter part of October, and into Bengal and further south not until well into November. In Assam and Manipur, however, I think they generally come in by October, and I have seen a pair about the 10th of that month.

In some parts of India they arrive in flocks of thousands; Hume writes in one place of "flocks of many thousands, and acres of water paved with them"; again, "I rowed into a flock of this species, several thousands in number." Reid also, after saying that though (in the Lucknow division) he had come across them in small parties, as a rule, of a dozen or so, yet "one morning in December I came across countless numbers on a jheel in the Fyzabad district closely packed and covering the whole surface of the water, with their red heads moving independently, while the breeze kept their crests in motion; a distant spectator might have mistaken them for a vast expanse of beautiful aquatic flowers."

As a general thing, therefore, it would seem that the Red-crested Pochard likes to congregate in very large flocks, and it is only when the country is not very well suited to their wants that they split up into small parties, and under these circumstances very small flocks and even pairs and single birds may be sometimes seen.

They are open-water birds by choice, frequenting large sheets of water, unobstructed by surface weeds, reeds, or water-plants, except about the shores or banks. Of course, where they are most common, a few birds may be met with in almost any kind of water, but it is rare for any large flock to be found on vegetation-covered swamps, small dirty jheels, &c.

They are splendid swimmers, and regularly play about on the water with one another where undisturbed, and as divers they are even better than as swimmers, though the White-eye may excel them in this respect.

Legge says: "This handsome Pochard, though belonging to the family of diving ducks, which are mainly characterized by their webbed or lobed hind toes, is said by those who have observed its habits not to dive for its food, but to feed, like ordinary ducks, in shallow water, with its neck stretched down and body turned up."

This, too, is what Dresser says, but would appear to be distinctly contrary to what most observers have noted: what Hume records is what most of us have taken to be the habits of this bird; he writes thus after quoting Dresser's remarks: "I should like to know where he obtained this valuable information. The fact is, that though you *may* at times see it *dibbling* about in the water like Teal and Shovellers, or again feeding as

he describes, its normal habit and practice *is* to dive, and I have watched flocks of them, scores of times, diving for an hour at a time with pertinacity and energy unsurpassed by any other wild fowl. Examine closely their favourite haunts, and you will find these to be almost invariably just those waters in which they *must* dive for their food. Deep broads, where the feathery water-weed beds do not reach within several feet of the surface, not the comparatively shallow ones, where the same weeds (the character of their leaves changed, however, by emergency) lie in thick masses coiled along the surface."

This is certainly my experience, and I noticed in the Sunderbunds how very much this duck kept to the open central portion of the huge bheels, feeding there on and amongst the aquatic plants, especially on a long, trailing, moss-like weed which grew several feet under water. Moreover, I have found in their stomachs the roots of plants which do not grow except in fairly deep water. They not only dive well and for long periods, but they also dive to no inconsiderable depth; and that it is a pleasure to them to dive is shown by their constant diving when at play, chasing one another both above and below the surface.

They feed both by day and night, but mainly in the early morning and evening; and though the very much greater portion of their diet is undoubtedly aquatic, yet they have been known to feed on young crops on dry land. Of course, like all or nearly all ducks, they rest during the hottest hours of the day, selecting quite open deep water for that purpose when it is available. They have the credit of being awkward and feeble on land, but that very close observer, Mr. F. Finn, says that it comes ashore more often than the other Pochards, and walks better also.

No duck varies much more than does this one in the quality of its flesh: when at its best very few ducks, indeed, are better for the table, but at its worst the White-eye itself is but little more rank and coarse. This variability is undoubtedly due to its wide range of feeding. Naturally they are principally vegetable-feeders, and when feeding on water-plants and young crops their flesh is naturally excellent; but when, as is sometimes the case, they feed on fish, shell-fish, water insects, &c., they at once assume a rank fishy taste which no amount of seasoning will obscure.

Hume found one which had gorged itself on small fish about an inch in length, and I dissected one which had eaten, as far as I could see, nothing but the tiny red crabs which swarm in such countless myriads along the shores of rivers, swamps, and back-waters in the Sunderbunds, the waters of which are brackish. This was the only specimen the contents of whose

stomach I noted whilst shooting in Jessore and Khulna ; but all we shot and tried to eat tasted the same, and I have no doubt that they, too, had been feeding on crabs.

In Cachar and Sylhet I found the Red-crested Pochard one of the very best of ducks for the table, and the same held good in the Dibrugarh and adjoining districts of Assam.

They are strong flyers and go at a good pace, but they are very slow in getting off the water and take some time to get their pace up.

Finn says that their note is a harsh croak sounding like "Kurr." This is the same syllable used by Hume to represent their note, he calling their note a "deep grating kurr." He also adds : "Occasionally the males only, I think, emit a sharp sibilant note—a sort of whistle, quite different from that of the Wigeon, and yet somewhat reminding one of that."

From a sporting point of view, the Red-crested Pochard is all that can be desired. About as smart as they make them, he seems to have special aptitude for judging the length of range of different guns ; and a flock may be caught once, but seldom twice, whatever distance the gun may reach.

They swim so fast that they can by this means alone generally escape, and they are often very loath to rise when they can thus get out of shot. Their swimming powers, manner of packing, and capacitude for diving are so well shown by Hume's account of his shooting in the Etawah District that yet again I indent on him wholesale :—"All night long . . . I had heard water-fowl coming in, and the next morning, before dawn, I was out in my punt, working softly round the margin to the western side, so as to have the fowl, when twilight broke, against the daylight sky. I soon made out by their cries that the mass of the fowls were Pochards, that there were a vast number of them, and that a great number of them belonged to the present species. Day dawned, and I could soon see a dense mass of fowl . . . probably fully a quarter of a mile off. . . . Lying down I paddled towards them. Very soon a fresh north-west wind sprang up against me. Quite a sea rose. I was perpetually grounding, and they were swimming away steadily against the wind, so that it was bright sunlight before I got within two hundred yards, and then I could see they were all Red-crests. I had now got into deeper water, and went as hard as I could without splashing ; but they swam steadily away, and I must have gone fully half a mile before I had gained one hundred yards on them. Still they had not shown the slightest signs of suspicion (and I

knew their ways well), but were swimming gaily on *en masse*, head to wind, as they often will on windy mornings. On I went. I had a long heavy English swivel, carrying a pound of shot (No. 1 I had in) ; there were between two and three thousand of them, as closely packed as they could swim. I was certainly within seventy yards of the hindermost bird ; I calculated to get within about forty yards of these and fire over their heads into the centre of the flock. They were close packed and backs to me, so there was little to gain, and possibly a great deal to lose, by flushing them. I was within fifty yards when again I grounded ; had I even then fired at once I must have made a very large bag, but I thought I knew that this was only a point of a mound, and I wasted some precious moments struggling to get over it with the paddles. The nearest birds must have been seventy yards distant before, seeing I was hard and fast, I snapped an ammunition cap on a little pistol I always carried for the purpose, and raked them as they rose. The next instant there was a whole line of birds fluttering on the water, seven dead, and twenty-one winged. I recovered every one of them, but it was noon before I bagged the last ; and if I had had a desperate hard six hours' work, I hardly remember any six hours which I more thoroughly enjoyed."

This duck breeds throughout the southern countries of Europe, in parts also of Northern Africa, and in the most northern parts of its Asiatic habitat, as far south as Shiraz in Persia. In Europe it is found breeding occasionally in Northern Germany, France, &c., but its true breeding-haunts are further south. In Central Germany it is common. Hume, referring to the nests taken by Dr. Baldamus, remarks :—" Dr. Baldamus, who has taken many nests in Central Germany, all, however, on 'a pond overgrown with weeds, flags, and other aquatic plants, close to the Mansfelder Salt Lake,' tells us that they are always placed in the rushes or flags, usually in a small island in the pond or on the flags ; and like all ducks' nests, they have a foundation of rotten stems, plucked rushes, or dead leaves, on which a warm bed of down plucked from the breast of the female is placed. When the female leaves the nest quietly she covers her eggs, as do all ducks. The eggs vary from eight to nine, ten being the exception, and seven only in late sittings. All his nests were taken between the 12th June and the 1st July, the latter nests being much incubated, so that in this locality they probably lay from 1st May to 15th June. The eggs are only moderately broad ovals, without gloss, a bright, somewhat olive-green when fresh and unblown (fading to a dull

greyish-olive or greenish-grey when blown), and measure about 2·3 inches by 1·6."

Salvin writes :—"In the open pools at the upper end of the marsh at Zana I used to see several pair of the Red-crested Duck. Two nests only were obtained. The second lot, consisting of seven eggs, were of a brilliant fresh green colour when unblown ; the contents were no sooner expelled and the eggs dry than the delicate tints were gone and their beauty sadly diminished."

The nest is a large coarsely-made structure, which seems to be made invariably of practically nothing but rushes and soft water-plants. Twigs, dry grass, and other materials got from land are but little used, and it is probable that much of what is used is subaquatic stuff and is got by diving. The lining of down and feathers is usually very dense and thick, completely covering the eggs.

As a rule the duck selects as a site for her nest some small pond well covered with weeds and vegetation, or some patch of water in fen or marsh land, well isolated and free from observation and interference. I have come across no notes on their nidification to show that they ever breed on the edges of larger or more open pieces of water, and these they seem as a rule to avoid during the breeding-season, unless, perhaps, for purposes of feeding. Wide marshes and fens, with pools scattered here and there in amongst the bog and scrub-covered land, would appear to be their favourite resorts.

When fresh, the eggs are a beautiful clear green stone-colour, and have a decided gloss, but lose both their bright tints and gloss soon after being blown. The texture is smooth, fine, and close, but the shell is rather fragile for the size of the egg, and this would appear to be the case with most Pochard's eggs.

In shape they are either rather long or rather broad ovals, very regular in shape, and with both ends practically the same in size.

The majority of birds breed in May and early June ; very few, it would seem, as early as the end of April. The number of eggs is most often eight or ten, but they vary from only six to at least fourteen on a few occasions.

Genus NYROCA.

The genus *Nyroca*, according to Salvadori, who divides *Fuligula* from *Nyroca*, contains ten species, of which three are found in India. *Nyroca* differs from *Netta* in the formation of the bill and lamellæ, the latter having them larger, more prominent, and closer together than the former.

The genus is a cosmopolitan one, and amongst its ten species contains what is, perhaps, our most common duck, namely, *Nyroca africana* (or *ferruginea*), the White-eye.

Key to the Species.

- a.* Back and scapulars distinctly barred or vermiculated . . . *ferina* ♂.
- b.* Back and scapulars merely speckled.
 - a'.* Head and neck dull chestnut or bay . . . *africana* ♂.
 - b'.* Head and neck almost black . . . *baeri* ♂.
- c.* Upper back and head rufous-brown, scapulars slightly vermiculated; no white speculum . . . *ferina* ♀.
- d.* No vermiculations on upper plumage; a white speculum.
 - a''.* Head and neck rufous-brown . . . *africana* ♀.
 - b''.* Head and neck more or less mixed with blackish on the sides . . . *baeri* ♀.

In addition, *baeri* may be discriminated from *africana* by its larger size and proportionately larger bill.





$\frac{3}{8}$

THE POCHARD OR DUN-BIRD.
Nyroca ferina

J. E. S. S. S.

(36) NYROCA FERINA.

THE POCHARD OR DUN-BIRD.

Aythya ferina, *Jerdon, B. I.* iii, p. 812; *Hume, Str. Feath.* i, p. 264; *Adams, ibid.* p. 409; *ibid.* ii, p. 341; *Butler, ibid.* iv, p. 30; v, p. 234; *Ball, ibid.* vii, p. 232.

Fuligula ferina, *Dauids. & Wend. Str. Feath.* vii, p. 93; *Hume, ibid.* p. 496; *id. Cat.* no. 968; *Hume & Mar. Game-B.* iii, p. 247; *Legge, B. of Cey.* p. 1090; *Butler, Str. Feath.* ix, p. 438; *Reid, ibid.* x, p. 84; *Dauids, ibid.* p. 326; *Taylor, ibid.* p. 531; *Barnes, B. of Bom.* p. 412; *Hume, Str. Feath.* xi, p. 346.

Nyroca ferina, *Salvadori, Cat. B. M.* xxvii, p. 335; *Blanford, Fauna B. I.* iv, p. 458; *Oates, Game-B.* ii, p. 309.

Description. **Adult male.**—Whole head and neck rich deep chestnut, changing rather abruptly into the black of the upper back and breast; rump and upper tail-coverts dull black; remainder of upper plumage extremely pale clear grey, very finely vermiculated with black bars; wing-coverts dark grey, more or less vermiculated with white; primaries dark grey, edged outwardly and tipped blackish; secondaries forming a dull grey speculum, the feathers narrowly tipped whitish and divided from the inner secondaries by narrow black borders to two or three of these feathers; lower breast blackish, the feathers more or less fringed white; remainder of lower plumage white or very pale grey, sparsely stippled with black, the stippings more numerous towards the vent and flanks; under tail-coverts dull black; tail dull greyish-brown, tipped paler.

Occasionally the male has a pure white spot at the apex of the chin, a skin lent me by the Bombay Natural History Society having the spot more highly developed than in any other specimen I have ever seen.

Irides yellow or reddish-yellow; base and end of bill black, intermediate portions varying from pale clear plumbeous-blue to rather dull dark plumbeous; the legs vary through the same shades of grey or plumbeous-blue, darker and blackish on the joints and webs.

"The irides vary; they are generally orange-yellow, but I have noted them brown in one apparently adult female and lac-red in an old male.

"The legs and feet are pale bluish or slaty-grey, or dull leaden, often darker on the joints, and with the webs black or nearly so. The bills are black and bluish-grey or leaden, in varying proportions. In some the whole bill is black, with only a leaden-coloured crescentic bar on the upper mandible towards the tip. In others only the tip and the basal portion of the upper mandible to a little beyond the nostrils are black, and the whole intervening portion of the upper mandible is leaden-blue; and between these two extremes the breadth of the blue band or bar varies.

"Length 18 to 20·5 inches, expanse 29·4 to 32·2, wing 8·5 to 9·5, tail from vent 2·35 to 3·2, tarsus 1·4 to 1·5, bill from gape 2·15 to 2·29. Weight 1 lb. 13 ozs. to 2 lbs. 5 ozs." (*Hume.*)

Adult female.—Forehead and crown dark brown, fading to dull fulvous-brown on the hind-neck, sides of the head and neck, and thence to pale fulvous-grey, or greyish-white, on chin, throat, and fore-neck; back and scapulars greyish-brown, with greyish vermiculations mixed with black, the vermiculations varying very much in extent and being sometimes almost wanting; lower back, rump, and upper tail-coverts blackish, the external feathers of the rump with a few fine white bars; tail and wings as in the male, but the latter much duller and less vermiculated; whole lower parts pale dull grey, tinged with rufous-brown on the breast and sides, and darker brown towards the vent and under tail-coverts.

Irides dull yellow, rarely brown; bill as in the male, but generally with the blue more restricted in extent and a duller shade; legs and feet similar to those of the male, but duller on the average.

"Length 17·25 to 18 inches, expanse 28·75 to 31·5, wing 7·9 to 8·3, tail from vent 2·2 to 3·1, tarsus 1·4 to 1·5, bill from gape 2 to 2·19. Weight 1 lb. 5 ozs. to 2 lb. 4 ozs." (*Hume.*)

Young males resemble the females, but have the head much more reddish and also paler, and, according to Finn, are usually browner below.

"**The male in undress** retains much of his full colour, merely getting a browner head, a dark-pencilled grey breast, and duller tail-coverts." (*Finn*, 'Asian.')

"**Males in first nuptial dress** differ from the adults in having the chestnut of the head and neck paler, and the black of the breast and upper back replaced by dark brown.

"**Young in down**, according to Naumann, are dark brown on the upper parts, shading into rusty brown on the head and neck; underparts dirty yellowish-white: bill and feet light bluish; iris grey." (*Salvadori.*)

The Pochard, Red-headed Pochard, or Dun-bird, as it is variously called, has a very wide distribution, practically throughout the Palæarctic region from Iceland to Japan. It breeds almost throughout the more southern portions of this area, but very rarely to the east, not at all to the extreme east, and it winters throughout Southern Europe and Asia and also in Northern Africa. Seebohm ('Birds of the Japanese Empire') says: "The Pochard occurs both in Yezzo and the more southerly Japanese islands, but whether it be resident or only a winter resident there seems to be no evidence to determine."

Nyroca ferina is separated by Salvadori from the American forms to which the names *americana* and *vallisneria* are applied. Many ornithologists unite *americana* and *ferina*, and in this case the whole of North America must be added to its habitat; and, consequently, also its breeding-range would then become circumpolar with the exceptions already noted. The American bird is larger, has more and clearer blue on the bill, a purer white to the underparts, and a purple gloss on the head and neck.

Finn, in his popular article on ducks in the 'Asian,' thus defines its Indian area :—"It visits Northern India in large numbers ; further south it is less common, but occurs as far as Bellary. It has not been obtained in Mysore or further south, nor in Ceylon ; but it is not uncommon in Assam and Manipur, and has recently been recorded from the neighbourhood of Mandalay."

This last record probably refers to the three birds shot at Mandalay by Capt. T. S. Johnson, in a miscellaneous bag of 562 ducks and geese, and mentioned by Oates in p. 310 of his 'Manual of Game-Birds.'

It is probable that it visits North Burma and the independent Burmese States in considerable numbers, for it is common in Manipur, whence a large proportion migrates towards Burma, and not through Cachar and Sylhet.

I have had it now reported to me from Mysore, where, however, it would only appear to be met with on very rare occasions. Hume notes that it has not been recorded from Cachar or Sylhet, but it is fairly common in both districts.

From Kashmir it has also been recorded as forming an item in a large bag made by three guns in that State, and again in the 'Asian' of the 8th of February, 1898, two Dun-birds are said to have formed part of a bag of 508 duck and teal shot by A. E. W. in the same State.

The Pochard is one of the later ducks to arrive in India. In its northern limits it is seen first in the latter half of October, but it does not, I think, extend south until well on into November. In Bengal, to the east and south, the *end* of November is as early as one may expect to get them in any numbers, though a few will always be seen in the beginning of that month—stragglers, perhaps, even earlier. I should not, however, call it a very common duck anywhere to the east of the Bengal Presidency, and I remember when shooting in the Sunderbunds this Pochard was never in any but very small numbers, although the country all about there is so admirably suited to all its requirements.

As regards the flocks it collects in, this would seem to depend almost entirely on the country it visits and its accommodation in the way of water. Thus, where there are huge jheels, morasses, and lakes covered in part with jungle and in part having open expanses of water of some depth, free of vegetation of a heavy character, they will be found in thousands ; elsewhere they will be found in small flocks, pairs, and rarely single birds. There is practically no kind of water that they will not visit *sometimes* in greater or smaller numbers, but, preferentially, they leave alone shallow

jheels and waters, and also such as have the vegetation everywhere dense ; on the other hand, they do not care for *quite* open water without vegetation of any kind whatever.

Even to this last, however, there is no absolutely fixed rule, for they sometimes visit the sea itself, keeping, as a rule, to harbours, estuaries, &c. When shot in such places they, like most other ducks got under the same circumstances, will be found to have a very rank and fishy taste, though when shot inland on their more ordinary haunts they are very uniformly excellent in flavour. Their bad flavour is, of course, due to their food, which, when they take to the seashore, consists of tiny marine shell-fish, fishes, &c. ; whereas, when in fresh water, it consists mainly of a vegetable diet, though, like all ducks, they are more or less omnivorous.

A near relation to this bird is the famous Canvas-back of America, so dear to the epicures of that continent, differing little from our bird in coloration, though it is rather larger and also slightly paler below. So close are the two birds in appearance, however, that, as Finn relates, a wretched poulterer in England, who had received, and was selling, a consignment of Canvas-backs from America in ice, was prosecuted for selling Pochards out of season. Most of us would probably think it was a very good thing, too, if such prosecutions helped to enforce a close time in America as well as in England.

It is a fine, rapid, and graceful swimmer, the water—not land or air—being its real element. Finn notes :—“This Pochard swims particularly low in water, and very much down by the stern.” The notes of this ornithologist on duck habits and manners are in great part made not only from wild birds, viewed of necessity from some distance, but also from close observation of birds in captivity, and are, in consequence, worthy of careful attention.

They are, of course, like all other Pochards, wonderful divers, and the greater part of their food is obtained by diving ; but they will also dive and swim after one another in play, and Hume remarks that when thus playing they seem to sit far more lightly on the water than at other times.

Their powers of flight are not equal to those of swimming and diving ; once on the wing, they go away at a good pace, but they are slow off the water and awkward as well.

Hume noticed that when there is a wind they always, if possible, rise against it. This is not, however, I think, typical any more of these ducks than it is of most, if not nearly all, water birds, as well as many land ones. In the old days, when Adjutants were so common in Calcutta, one could,

during the rains, watch one or more any day getting up off the *maidan* there, first expanding its huge wings and then going off in ungainly strides until the wind worked against and under its broad sails, when a lusty kick or two shot it off the ground.

On land, too, Pochards are very clumsy and slow, though they walk well enough when pushed to it.

Principally night-feeders, they also feed throughout the day, except in the hottest hours, where they are not interfered with. Hume once or twice caught them feeding on wild rice on land, but their feeding thus is, I should think, quite exceptional, and nearly all their diet is one obtained from fairly deep water amongst roots and similar things.

Normally they would appear to be neither very shy nor yet very tame, but it takes very little shooting to make them most decidedly the former; and then, owing to their keeping so much in the centre of the water they frequent, they are by no means easy to get within shot of.

I do not remember ever to have heard the Pochard utter any sound other than that characterised by Hume and other writers as "*Kurr-kurr*." It is like that of the White-eye, but harsher and louder.

Latham, in his 'Synopsis of Birds,' says that it "has a hissing voice. The flight is rapid and strong; the flocks have no particular shape in flying, but are indiscriminate."

This flying *en masse*, and not in line or V-shape, would appear to be typical of all the true Pochards.

The Pochard breeds extensively over Europe and even in Northern Africa, in Algiers. It has also been reported as breeding in Egypt, but probably by mistake. It also breeds in the western half of North Central Asia.

They make their nest beside the water—generally right at the edge in amongst long grass, reeds, or bushes, and sometimes actually in the water itself. Any piece of water would seem to serve the bird's purpose, as long as there is sufficient cover—it requires this fairly thick and plentiful,—nor would it seem to mind whether the water is fresh, salt, or brackish.

The nest itself is a very slight structure, composed of the usual materials employed by ducks, *i. e.* grass, rushes, weeds, &c.; when placed actually in the water, it is of necessity somewhat more bulky and better put together than at other times, but even then it is more flimsy and rough than that of most ducks.

When placed, as it often is, in some hollow or depression in the ground,

or among roots, &c., it consists merely of a couple of handfuls of materials lined with feathers and down.

Morris says :—"The nest of the Pochard is made among rushes or other coarse herbage, and is lined with feathers. Many nests are placed near each other in suitable localities, such as osier beds or grassy places."

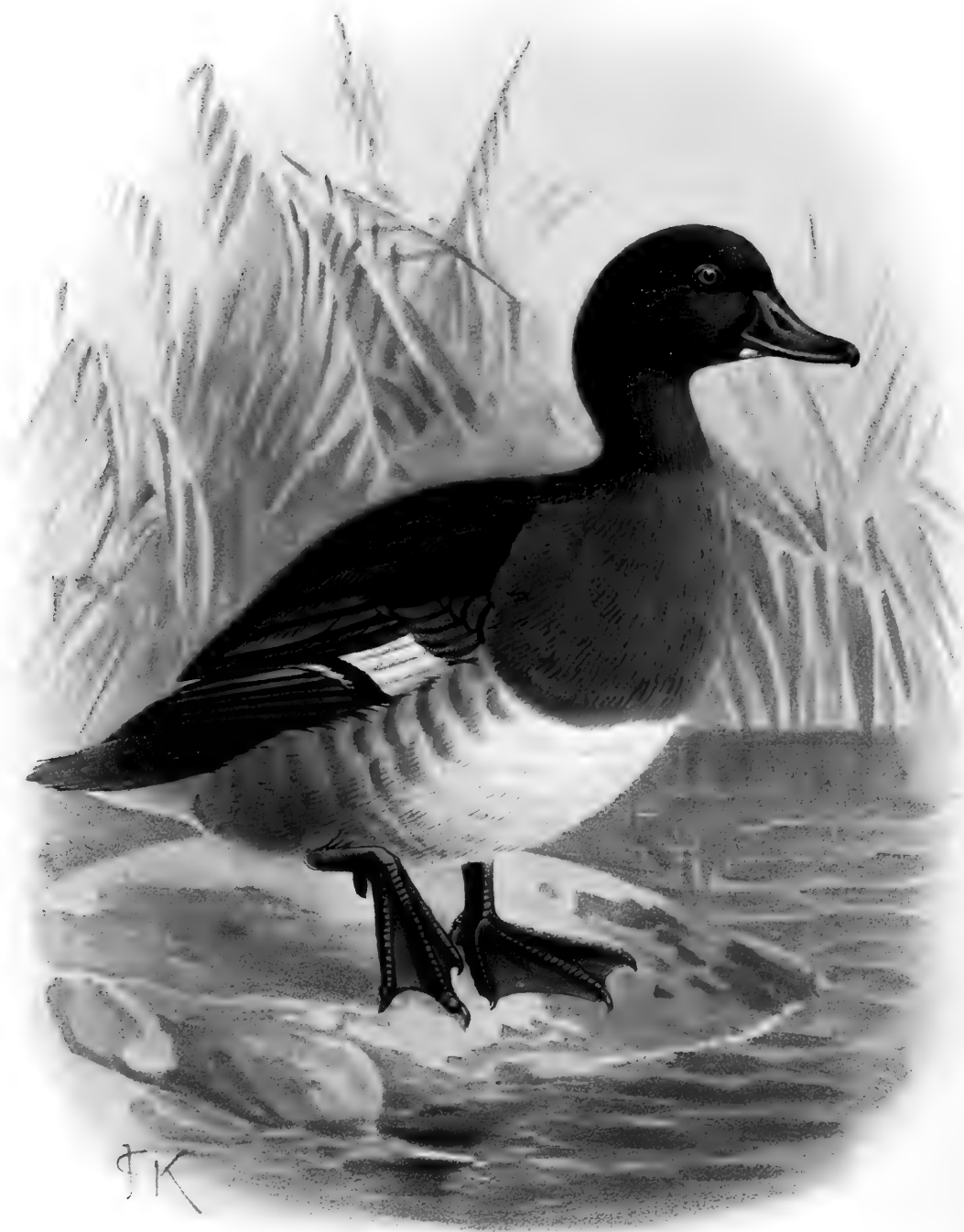
The eggs are from eight or ten to twelve or thirteen in number and of a buff-white colour.

Dr. Leverkühn sends me the following interesting note from Sophia, which confirms what other observers have said as to the high qualities of the Pochard as a mother :—" *Nyroca ferina* is a regular breeder in different lakes in Germany, where I have sometimes taken its nest, and I also ascertained the fact of its breeding on a swampy lake near Varna. The female shows great anxiety concerning the safety of her eggs, and covers the clutch before leaving with some feathers from the bottom of the nest. I found eight and ten eggs in a nest."

Hume describes the eggs thus :—"The eggs are very regular broad ovals ; the shell smooth, but dull and glossless. In colour they are a pale, dingy, greenish drab, more or less, in most cases, tinged with yellow. They average about 2·4 inches in length \times 1·7 in breadth."

The eggs in my collection are dull, rather dark, brownish drab, but have little or no trace of either green or yellow in them, though they may have had when fresh. In shape and texture they agree with Hume's description, but one egg has a decided, though faint, gloss. My eggs average about 2·25 \times 1·7 inches. As with other Pochards' eggs, they have a rather fragile shell.





3

THE EASTERN WHITE-EYE.
Nycticorax nycticorax.

J. Green. Engraved

(37) NYROCA BAERI.

THE EASTERN WHITE-EYE.

Fuligula baeri, *Finn*, *P. A. S. B.* 1896, p. 61; *id.* *Jour. A. S. B.* lxi, pt. 2, p. 525; *id.* *Indian Ducks, Asian*, 1899.

Nyroca baeri, *Salvadori*, *Cat. B. M.* xxvii, p. 344; *Blanford, Fauna B. I.* iv, p. 461; *Oates, Game-B.* ii, p. 328.

Description. **Adult male.**—A large spot at the angle of the chin pure white; the remainder of the head and neck black, glossed with green; breast rufous-chestnut, that colour merging into the black of the head, but sharply defined from the white of the abdomen and under tail-coverts; the feathers of the vent brownish at the base; flanks rufous-brown; upper parts dark brown; the scapulars and interscapulars very finely covered with narrow bars of lighter brown; rump and upper tail-coverts brownish-black, a few of the feathers at the side finely vermiculated with white; tail brown; wing-coverts dark brown, the outer secondaries white with a broad subterminal black band; quills brown, the inner webs of the primaries greyish-brown; the inner secondaries very dark brown, in good specimens very narrowly margined black on nearly the whole of the outer web and glossed with olive-green.

Bill dull slate-blue, the basal third, tip, and nail black; irides white; legs and feet greyish-lead, joints and webs darker.

“Feet lead-grey, with the joints darker; irides white or pale yellow.” (*Salvadori*.)

Length 18 to 20 inches, wing 8·2 to 9·5; bill from point of forehead 1·75, from extreme base 2·2, from gape 2·1, breadth at base ·73 and at broadest part ·86; tarsus 1·4.

Adult female.—Like the male, but the head is blackish-brown unglossed with green and has the anterior part rufous; the spot on the chin appears to be smaller, and the throat and lower part of the neck are more rufescent and paler; the whole tone of the bird is duller, and the definition between the breast and abdomen is blurred and indistinct, while the abdomen itself appears to be a sullied, not pure white.

Irises grey or brown, perhaps white in very old females; bill and feet as in the male, but still duller.

“The eyes of the female are brown, rarely grey or whitish.” (*Finn*.)

Length about 16 inches, wing about 7·5, tail 2·3; bill from point of forehead 1·7, from extreme base 1·98, from gape 1·9, in breadth ·61, and at widest part ·85; tarsus about 1·4.

“The female is smaller than the male, especially about the bill; but females in this species appear to vary in size much more than the males, and, as in the Tufted Pochard, some are much duller and less like the males than others.” (*Finn*.)

A young male in my possession has the whole head mottled brown and black, the new black feathers showing the sheen of the usual green gloss; the breast is a queer mixture of dirty yellowish-brown and the deep rufous or bay of the adult bird; the lower abdomen and vent are mixed brown and white.

Another young male exactly answers to the description above given for the female, but that the definition between breast and abdomen is very sharp, and the olive gloss on the wing is highly developed.

Baer's Pochard is the Eastern form of the Common White-eyed Pochard, to which it is very closely allied, yet, as far as fully adult birds are concerned, from which it is very easily distinguishable. It would appear to average a much heavier, bulkier bird; and all the birds in my collection, among them two received from Mr. Finn, have proportionately the bill much larger, both longer and wider. Neither Blanford, Salvadori, nor anyone else, as far as I can gather, seems to have noticed this; but to me, when specimens of the two species lie side by side, this vast difference in the bills is what first draws attention.

Of course, my series is a very small one, and it is quite possible that large series might show intermediate sizes in both species.

Its range extends, according to Salvadori, from Kamtschatka to Shanghai and Japan, descending south in winter into India, and almost certainly into South China and Burmah.

Mr. Finn, who has kindly given me *carte blanche* to use his notes, thus sums up the records of its appearance in India:—

“It was apparently obtained in Bengal in 1825, and Blyth certainly got one female in the Calcutta Bazaar in 1842 or 1843, but did not identify it, which is not surprising, seeing that it had not been recognised as a species. Then, at the end of February 1896, I got eleven full-plumaged birds, and since then the species has come in greater or less numbers every cold weather. I have got three males and a female this month (the former from a dealer) and saw what was either a small dull female or a hybrid with the Common White-eye about the middle of January. We have other birds in plumage intermediate between the White-eyes, and I therefore now think that they interbreed.”

Mr. Finn does not think that Baer's Pochard has been a common form merely overlooked. Certainly, as he says to me *in epistola*, Baer's Pochard when adult cannot well be mistaken for the Common White-eye. Blyth's bird was a young female and therefore, of course, very much like a Common White-eye. It may be, therefore, that there was just a temporary, unaccountable rush of this species to India, and that it will again cease.

At the same time it seems probable from his observations in Calcutta that the Eastern White-eye will prove to be a regular and not uncommon visitor to the north-eastern parts of India, and, almost equally surely, to

Northern Burmah. My own collectors on two occasions obtained a young male in Cachar ; they seemed to know the bird, and called it the "boro lalbigar," or "Larger White-eye." When questioned they said it was a rare but regular visitor to Cachar, and a more common one in Sylhet, whence they offered to procure me specimens.

Mr. Oates assumes that the present bird is the common form of White-eye procured in Cachar, Sylhet, Manipur, and Burmah. This, however, is distinctly not correct as regards the first-mentioned three places, in which the Eastern or Baer's White-eye is infinitely more rare than the Common White-eye. I have myself shot over the districts of Lakhimpur, Tezpur (rarely), Gowhatty, Cachar, and Sylhet, and in all of these it is the Common White-eye which is the typical local form, though from all these districts, except Gowhatty, I have obtained one or more specimens of Baer's bird.

Manipur has been shot over by many keen sportsmen who were also good observers, and in one or two cases good field-ornithologists as well, and I cannot believe that none of these would have noticed Baer's Pochard if it had been in any way common. All specimens sent me from Manipur have been of the Western form, and I have no doubt that it is the typical form of that State.

As regards Burmah, I cannot dogmatize, but I should note that when I tried my utmost for three years to get specimens of Baer's Pochard from both North and South Burmah, I only succeeded in getting three—two from the Shan States and one from near Bhamo ; all the others sent me were fine specimens of the Common White-eye. I think the inference to be drawn is that, even in Burmah, Baer's Pochard is not the common type.

Again, indenting on Finn, I quote from the 'Asian':—"No one seems to have had much opportunity of observing this duck in a wild state, and my own observations have been restricted to captives. It is a better walker than most Pochards, and, I have fancied, hardly so fine a diver. It certainly, judging from the birds in the fine water-aviary in the Alipore Zoological Gardens, rises more easily on the wing, and flies with less effort than other Pochards. I notice that at Alipore our birds can rise well up into the roof, and fly round and round like the surface-feeding ducks. The species appeared to stand the heat less well than the Common White-eye, and probably breeds in a higher latitude. I am ashamed to say that, having had more to do with this species than anyone, I do not know how it tastes."

I ate part of the flesh of one of my birds, and it was not at all good, not good enough to finish even.

I remember about 1898-99 Mr. J. Kennedy, then Deputy Commissioner, Cachar, shot a White-eye up in the North Cachar Hills, which attracted my notice from its great weight and very dark glossy head. I was not then at all interested in ducks, except when on the table, and put the bird down as an abnormally coloured and very large Common White-eye; but now I have no doubt that it was a good specimen of Eastern White-eye.

The bird was one of a flock of about a dozen or less, which we sighted flying up-stream on the River Diyung, a mountain-stream consisting of rushing rapids and deep still pools of water in alternation. We followed them up and found the birds in a deep, but very rapid narrow, which in one place widened out and made an eddying pool on either side, in which the ducks were swimming.

On our approach they got up, but Mr. Kennedy fired and knocked one over; it was only winged and fell into the torrent, leading us a pretty dance before we eventually secured it. The great pace of the water seemed to have no appreciable effect on it, either in diving or in swimming, for it dashed backwards and forwards with the greatest ease, kept long under water, and turned and twisted with great agility. At last a snapshot, as it showed itself for a moment, brought it to hand.

I remember the duck, though it must have been a very fully adult male, had bright pale yellow irides. The bird was so rank and fishy that we could not stand it on the table.

Two of my collectors (Mahomedans), who had lived all their lives in Cachar and Sylhet, say that this White-eye is a faster, stronger bird on the wing than the Common White-eye, an equally good diver and swimmer, and much more shy and wary.

Seebohm, in his 'Birds of the Japanese Empire,' says that "the Siberian White-eyed Duck breeds in the valley of the Amoor." This is the only note of its breeding which I can find.

It is probable that in nidification it will differ in no way from the Common White-eye, though we may expect to find its eggs to average somewhat larger, and the single egg in my possession bears this out. It is a very dirty dull-coloured drab, in shape a broad regular ellipse, and it measures 2.01×1.51 inches. It has no gloss, and the texture is exactly the same as that of *N. africana*.





THE WHITE-EYED POCHARD.
Nyroca africana.

(38) NYROCA AFRICANA.

THE WHITE-EYED POCHARD OR WHITE-EYE.

Aythya nyroca, *Jerdon, B. I.* iii, p. 813; *Hume, Nest & Eggs*, p. 645; *id. Str. Feath.* i, p. 265; *Adam, ibid.* p. 402; *Butler, ibid.* iv, p. 30; v, p. 234; *Dauids. & Wend. ibid.* vii, p. 93; *Ball, ibid.* p. 232.

Fuligula nyroca, *Hume, Str. Feath.* vii, p. 493; *ibid. Cat.* no. 969; *Scully, Str. Feath.* viii, p. 363; *Hume & Mar. Game-B.* iii, p. 263; *Vidal, Str. Feath.* ix, p. 93; *Hume, ibid.* p. 259; *Butler, ibid.* p. 439; *Reid, ibid.* x, p. 84; *Davidson, ibid.* p. 326; *Taylor, ibid.* pp. 528, 531; *Oates, B. of Brit. Burm.* ii, p. 287; *id. Nests & Eggs* (2nd ed.), iii, p. 292; *Barnes, B. of Bom.* p. 413; *Hume, Str. Feath.* xi, p. 347; *Sinclair, Jour. B. N. H. S.* xiii, p. 192.

Nyroca ferruginea, *Blanford, Fauna B. I.* iv, p. 460.

Nyroca africana, *Salvadori, Cat. B. M.* xxvii, p. 345.

Nyroca nyroca, *Oates, Game-B.* ii, p. 318.

Description. Male.—Whole head, neck, and breast rich rufous or bay-brown, the nape somewhat darker, a dark collar of brownish-black round the neck and thence behind to the back the same colour, a small white spot on the chin; whole upper parts dark blackish-brown or dull black, the feathers of the scapulars and upper back more or less vermiculated with rufous, the vermiculations often almost entirely absent. Wings as in *N. baeri*, but are said, as a rule, to have the white purer; I have, however, specimens of both species quite inseparable in this respect. Lower plumage the same as in *N. baeri*. Irides white; bill dull slaty; legs dull dark slate, tinged either with grey or green; and sometimes mottled about the joints.

Length about 17 inches, wing 7·1, tail 3·3, tarsus 1·2; bill from front 1·56, from extreme base 1·96, width at front ·78 and at base ·64.

“Length 16 to 17·1 inches, expanse 24·5 to 27·3, wing 6·8 to 7·45, tail from vent 3·1 to 3·5, tarsus 1·1 to 1·3, bill from gape 1·9 to 2·1. Weight 1 lb. 2 ozs. to 1 lb. 9 ozs.

“The bill is black, bluish-black and dark leaden, often browner below; the irides white or greyish-white; the legs and toes slate-colour, leaden or dusky grey; the tarsi often with a greenish tinge; the claws and webs dusky to black.” (*Hume.*)

Adult female.—Similar to the male, but with the whole plumage duller, the head and breast more brown than rufous and ill-defined from the abdomen, which is itself much sullied, except in very old females.

Length about 16 inches, wing about 7, tail about 3·3; bill generally rather smaller than that of the male, but sometimes reaching the full dimensions given above. Legs, feet, and bill as in the male; irides grey or brownish-grey, sometimes white in very old females.

"Length 15·9 to 16·5 inches, expanse 24 to 26·5, wing 6·8 to 7·4, tail from vent 3 to 3·4, tarsus 1 to 1·25, bill from gape 1·9 to 2·5. Weight 1 lb. 3 ozs. to 1 lb. 6 ozs." (*Hume.*)

Young male.—Similar to the female, but with the whole head and breast much suffused with ochraceous, and the centre of the abdomen with the broad brown bases to the feathers showing prominently; the back is lighter also than in the old females, with the pale borders to the feathers well defined.

Scully, quoted by Hume, thus describes two young birds:—

♂ *juv.*, 30th July.—"Length 16·1 inches, expanse 21, wing 5·1, tail 2·4, tarsus 1·1, bill from gape 1·75. Weight 15·5 ozs. Bill dusky, livid below; irides dark brown; legs and feet mottled dusky; claws black."

♀ *juv.*, 18th July.—"Length 15·7 inches, expanse 26·2, wing 7·5, tail 2·1, tarsus 1·2, bill from gape 1·9. Weight 15·4 ozs. Bill black above, grey-slaty below; irides brownish-grey; legs and toes dusky plumbeous, webs greyish-black; claws black."

Young in first plumage.—"Head and neck brown, with scarcely a chestnut tinge on the sides of the head; breast and underparts brown, paler, almost whitish, on the abdomen; under tail-coverts dull whitish." (*Salvadori.*)

"Young in down are dark brown on the upper parts, with pale spots on wings and scapulars; underparts buff, shading into brown on the flanks." (*Seeböhm.*)

Salvadori thus defines the limits of the White-eye:—"Western Palearctic Region, as far east as the valley of the Obb; breeds in the basin of the Mediterranean, in Central and Eastern Europe, and in Western Asia as far as Kashmir; in winter it extends in Africa as far south as the Canaries on the West and Abyssinia on the East, in Asia as far south as India and Arrakan."

In India the White-eye is extremely common over the whole of the northern portion, though it becomes less so to the east of longitude 9 degrees, being still found, however, in considerable numbers throughout Assam, Manipur, Cachar, Sylhet, Chittagong, and Southern Burmah.

As regards the last-mentioned, however, some of the records may refer to the Eastern Pochard.

As it wanders south, it appears to get more and more rare, but it is not easy to trace its extreme southern limit. To the extreme west, Vidal got it at a place called Khed, in Ratnagiri, about latitude 17° 4'. Mr. P. M. Allen records having shot a pair of White-eyes in the Nizam's territory at Nalgonda, latitude 17° 22'. Then to the east coast, Hume says, "I have failed to trace it; it is not recorded from . . . one of the Madras districts south of Mysore and the town of Madras." This would infer that he has had records of it as far south as Madras; but I cannot

find any traces of them. In Burmah it has only been recorded as far south as Arrakan.

The kind of water preferred by the Pochard is that also which forms the favourite resort of the White-eyed Pochard. I have, however, found them in all and any sort of water. Wandering up and down the hill-streams, clear deep pools and rushing torrents of shallow water following one another in rapid succession, I have often disturbed small flocks of the White-eye; and I have equally often found a pair or a small flock in the very dirtiest and smallest pools of stagnant water. It is also found in sea-water, *vide* Sinclair, who says that it is "the sea-duck of the Alibag Coast," where they "ride generally just outside the surf, where they were safe from disturbance from passing boats."

Where there are wide stretches of water, clear here and there in patches, but for the most part covered with water-plants, and with shores thickly lined with weeds &c., the White-eye assembles in vast numbers, but not in very large flocks. These (the flocks) may number anything between half a dozen and over fifty, but even of the latter number there will be but few. Then, again, the birds lie so scattered and far apart that they keep rising in ones and twos, giving the impression that they are only consorting in pairs or very small flocks, and of course many single birds and pairs are really met with.

As showing the numbers in which these ducks are found in suitable localities, it is worth notice that, in the 'Asian,' a bag of ducks was recorded as having been shot in Chapra, which contained 385 duck; but out of this no less than 187 were White-eyes. No doubt their manner of rising is a very admirable trait for any duck to possess, and the White-eye has other good points as well. As a rule it is a decidedly tame bird, still lingering in amongst the reeds and other jungle long after nearly all other ducks have left, rising well within shot when disturbed and often not going far before again seeking the water. It gets off the water badly, fluttering about and rising very obliquely; nor does it rise high when well on the wing, but generally flies within a few yards of the surface of the water, getting on considerable pace when once fairly away. It requires straight shooting to kill outright, for it is a hardy, close-plumaged little bird, and will take a lot of shot. Hit, but not killed, it is very far from caught, for it is a wonderful diver: quick and strong under water, it makes for the dense undergrowth, where it hides, or if dropped in the open dives for such long periods and goes so far and fast that the gunner never knows where to expect it and when he may get his second barrel into it. All his

good qualities are, however, quite overshadowed by the fact that when shot and caught it is no longer worth anything, for so rank and coarse is the flesh generally, that it is quite uneatable. The condemnation of the White-eye as an article of food is not, however, universal; thus, Colonel Irby speaks of the bird as found in Spain: "Its flesh is not only, like that of the Red-headed and Red-crested Pochards, excellent eating, but far surpasses either in that respect." Even here, in India, Captain Baldwin once wrote: "It is only a tolerable bird for the table." But Mr. F. Finn goes one better than tolerable, and writes in the 'Asian': "It is said to be very poor eating, but I have found it to be palatable enough." Tastes differ, however, and there may be others to agree with Messrs. Finn and Baldwin, but personally I have nearly always found them unpalatable in the extreme—fishy, oily, and rank.

Omnivorous, like all ducks, this species probably makes its diet fully three-quarters animal. Those birds which I shot in the Diyang and other hill-streams had all (in addition to the caddis-grubs, dragon-fly larvæ, and similar articles) quite a number of small fish, some of them 3 inches in length. These were all, or nearly all, of the small "Miller's Thumb" species, so common in every hill-stream. Doubtless these, from their sluggish disposition and their ostrich-like habits of hiding their heads under a stone and then resting in fancied security, fell a very easy prey to the active White-eye.

On land, this little Pochard is quite out of his element: he can walk all right, and get along well enough for purposes of slow progression, but he is very awkward and shuffling in his movements, and incapable of any appreciable increase in the speed of them even under the impulse of fear.

It is, on the whole, a very silent bird. Hume says that "their quack or note is peculiar, though something like that of the Pochard, a harsh 'koor, kirr, kirr,' with which one soon becomes acquainted, as they invariably utter it 'stuccato' as they bustle up from the rushes, often within a few yards of the boats."

It is in reference to this bird, and Captain Baldwin's note on the frequency he has shot it without any feet—not without one only, but without either,—that Hume raises the point as to how their feet have been lost, &c., and says that he himself has killed more than fifty birds thus maimed. Frost-bites he dismisses from the list of probable causes; and in this most of us will join him. But what, then, is the cause? Crocodiles would not, as a rule, take a foot at a time; traps are shown to be very unlikely agents; and one is thrown back on the fish theory. This is an

extremely likely one ; for I have myself known domestic ducks to lose their limbs from the attacks of a huge pike—indeed, when the birds were young and weak, they often lost, not their feet only, but their lives also. Ducklings constantly disappear in this manner. As there are many other fish quite as voracious as the pike in other climates, this would account very reasonably for so many birds losing one or more limbs.

This is one of the very few migratory ducks which breed regularly within our limits. As to its breeding in the plains, Hume writes :—"The White-eye breeds possibly in some localities in the plains of India, and in Sind, where it swarms during the cold weather, and where I was informed that in some broads it remained during the whole year. I have never, however, succeeded in finding a nest or obtaining any reliable information as to one being found in the plains." This was written more than eighteen years ago, and the reliable information is still wanting ; so that it is only fair to presume that the duck does not breed in the plains.

In Kashmir it breeds regularly and in very great numbers—so large, indeed, that the collecting of the eggs of this duck and of the Mallard, and bringing them into Sirinagar by boats for sale, formed a regular and profitable profession with a number of the people living in the vicinity of their breeding-haunts. The practice has now been prohibited, and the ducks are said to be *decreasing* in numbers. The nest is an ordinary structure of fair dimensions, made in the usual duck fashion of reeds, grasses, &c., and is, in India at least, nearly always placed either very close to the water or in the water itself amongst the vegetation growing in the shallows. Inside the nest there are, of course, feathers and down in greater or smaller amounts, frequently not much ; but, in addition to this, there appears generally to be a sort of subsidiary lining composed of finer grasses and weeds than are used in the body of the nest. This characteristic of the nest is rather marked in contrast to the majority of other ducks' nests, but it is well authenticated and worthy of notice.

Where the birds are most numerous, several nests may be found in close proximity to one another ; and as the birds are close sitters, finding them is a matter of little difficulty.

In Kashmir the first few birds breed in the end of April, but not many till the beginning of June ; and it was in this month that the regular trade in their eggs used to commence. They appear to lay from six to ten eggs, possibly one or two more occasionally ; but such occasions cannot be frequent, as Hume's collectors never succeeded in finding more than ten.

In the basin of the Mediterranean they would seem sometimes to place

their nest in cover, some little distance from the water ; for Lord Lilford, who found their nest in Southern Spain, writes :—" We obtained a nest of nine eggs, from which I shot the female bird. The nest was at a short distance from the water, in high rushes, and was composed of dead dry water-plants, flags, &c., and lined with thick brownish-white down and a few white feathers."

In Europe, also, it is said to sometimes lay twelve eggs ; and I have one record from Turkey of fourteen eggs having been laid in a nest. This nest also, I may add, was placed a considerable distance from water, in amongst the bushes. The colour of the egg varies from pale drab to a quite deep *café-au-lait*, the latter colour, if dark, being unusual. In a few eggs there is a faint yellow or greenish tinge ; but the greatly predominating tint is a brown or *café-au-lait*, and nine out of ten will be found to be of this.

The shape is, as a rule, rather a long oval, very regular, and they vary but little. Hume says : " They are commonly very regular and perfect ovals, moderately broad, as a rule, but occasionally considerably elongated and slightly compressed towards one end." In my small series I have no eggs thus compressed ; all are just about the same at either end. The texture is fine and close, but distinctly more porous than the average duck's egg ; and the eggs, in consequence, are very liable to discoloration. The surface is smooth, but has no gloss.

Hume's eggs vary in length between 1·9 and 2·2 inches, and in breadth between 1·4 and 1·54. I have two eggs 2·25 inches long, but in all others both breadth and length come within these extremes ; on the other hand, whereas Hume's series average $2\cdot1 \times 1\cdot49$ inches, mine average $2\cdot12 \times 1\cdot45$, showing them, as I have already said, to be rather narrower and long proportionately.

Genus FULIGULA.

Blanford unites *Fuligula* and *Nyroca*, and the difference between them is a very slight one, viz. that whereas *Nyroca* has the sides of bill practically parallel, *fuligula*, as defined by Salvadori and others, has the end decidedly wider than the base. Even this is only a matter of degree, as I have shown in the measurements of the bills of *N. baeri* and *N. africana*, and, but that I am following Salvadori's classification, I should be inclined to take Blanford's, with which I agree personally. As restricted, there are only five species in the genus, and of these only two visit India, and of these, again, the Scaup only in a very few instances.

Key to Species.

Head never crested ; back and scapulars in adult not black . . . *F. marila*.
 Head always more or less crested, and scapulars in adult black,
 more or less sprinkled with whitish *F. fuligula*.

This key is admittedly a very weak one. In spite of the statement that *F. fuligula* is more or less crested *always* having such very powerful support, the fact is that the head is not always crested, many young birds having no visible signs of a crest.

Mr. Finn has, however, pointed out to me a most useful point in the coloration of *F. fuligula*, and this is the wonderful *silky* or *satiny* whiteness of the lower parts. Even where the white is not pure, the satin texture is most apparent, and serves at once to divide the Crested Pochard from nearly all other ducks. Adults, of course, are easy to discriminate, and for them the above key stands good.

(39) **FULIGULA MARILA.**

THE SCAUP.

Fuligula marila, *Jerdon, B. I.* iii, p. 814; *Hume, Str. Feath.* viii, p. 115; *ibid. Cat.* no. 970; *Hume & Mar. Game-B.* iii, p. 272; *Hume, Str. Feath.* x, pp. 158, 174; *Stoker, ibid.* p. 424; *Barnes, B. of Bom.* p. 413; *Salvadori, Cat. B. M.* xxvii, p. 355; *Oates, Game-B.* ii, p. 337.

Nyroca marila, *Blanford, Fauna B. I.* iv, p. 462; *Wall, Jour. B. N. H. S.* xvi, p. 367.

Description. **Adult male.**—"Head, neck, upper part of the breast and of the back black; sides of the head and upper neck glossed with green; rest of the back and scapulars white, narrowly barred with black; rump, upper and under tail-coverts black; lower breast, abdomen, and sides white; the vent somewhat greyish; the sides with black barrings; upper wing-coverts blackish, finely vermiculated with white; secondaries white, forming the speculum, which is bounded below by a blackish band, in some specimens more or less freckled with white; tertials blackish with a green gloss, the larger ones more or less finely dusted with whitish; primaries greyish-brown, from the fourth quill with a whitish area on the inner web, the tips black; the marginal under wing-coverts greyish-brown, dusted with white, the remainder, as well as the axillaries, white; tail blackish; bill and legs light lead-grey, webs and nail of the bill blackish; iris yellow. Total length about 18 inches, wing 9·25, tail 2·9, culmen 1·8, tarsus 1·4." (*Salvadori.*)

Male.—"Length 20·0 inches, expanse 32·0, wing 9·0, tail from insertion of feathers 2·75, tarsus 1·42, bill along ridge 2·0. The bill is light greyish-blue or dull lead-colour, with the nail blackish; the iris rich yellow; the edges of the eyelids dusky; the feet pale greyish-blue, darker on the joints; the membrane dusky; the claws black." (*Macgillivray.*)

Adult female.—"Forehead, lores, and more or less of the chin white, encircling the base of the bill; rest of head, neck, upper back, and upper breast brown, the last mixed with white and passing into the white of the abdomen, not sharply defined as in the male; back and scapulars vermiculated brown and white, flanks the same but with more white; rump, upper tail-coverts, and tail dusky brown; wings as in the male but duller and browner." (*Blanford.*)

"Length 18·0 inches, expanse 28·0, wing 8·75, tail 2·5, tarsus 1·33, bill along ridge 1·83.

"Bill as in the male, but darker; the feet dull leaden-grey, with the webs dusky." (*Macgillivray.*)

"**Young male** has the white at the base of the bill like the adult female, but it is of a darker and richer colour." (*Salvadori.*)

Hume's young male had the wing only 7·9 inches; bill straight from base to tip 1·7, and at its greatest width ·87.

"The **very young female** is equally like the young *Nyroca*, but it has the chin, throat, a portion of the lores white, only a little speckled with rufous-brown (which white is not exhibited in any of my young White-eyes), besides the characteristic bill so much broader than those of young *Nyroca* of the same age and sex." (*Hume.*)

The measurements of a young female were: wing 7·1 inches; bill straight from base to tip 1·6, and at its widest part ·78.

Young in down.—"Crown, nape, and upper parts uniform dark olive-brown; throat, sides of the head, and fore part of the neck yellowish-white; a dull greyish band crosses the lower neck, rest of the underparts dull yellowish, the flanks greyish-yellow; upper mandible blackish, tooth of the beak yellowish; under mandible yellow." (*Dresser.*)

The Scaup is a duck of very northern latitudes, breeding in the Palaearctic and Nearctic Regions in the extreme north of Europe, Asia, and America up to, if not beyond, N.E. in Asia, latitude 70 degrees. In the winter it extends south to the basin of the Mediterranean, Southern Russia and Asia Minor, and Central and South-Central Asia, as far south as Northern India, South China, and Japan and Formosa, whilst in America it extends as far south (*vide* Salvadori) as Guatemala. In Africa it does not extend south at all; Von Heuglin and, after him, Seebohm record it from Abyssinia; but Salvadori says in the 'Catalogue,' most emphatically, "not (to my knowledge) reaching Abyssinia." Even here the southern limits given are rarely attained, large numbers of birds remaining all the winter north of latitude 40 degrees. The Scaup is only a very rare winter visitor to Northern India, and up to the date of the publication of the fourth volume of the 'Fauna of British India' I can find no other record of its occurrence outside those noted by Blanford,—viz., "Isolated occurrences have been recorded from Kashmir, Kulu and Nepal in the Himalayas, and the neighbourhood of Attock, Gurgaon near Delhi, and Karachi in the plains of India, and even Bombay." The last was recorded in the 'Bombay Natural History Journal' by Mr. J. D. Inverarity, who shot a female on a small tank near Panwell on January 13th, 1884. "Col. McMaster is of the opinion that one year, in January, he saw several birds of this species, on marshes and salt lakes, between Chicacole and Berhampur, in the Northern Circars (say 190° N. lat.), and the male is a bird that so experienced a sportsman could hardly mistake for any other species that occur there." I do not know if Col. McMaster said that they were *adult* birds that he saw, if so, perhaps—probably in fact—he

was not mistaken ; but if they were the common form of young bird found in India as a rule, he might very well indeed have been mistaken. It was an unusual thing, too, that he should have seen *several* birds when they are of such rare occurrence. On the other hand, I think there is no doubt that a great many young birds are yearly missed owing to these being mistaken for young Pochards of other kinds.

In addition to those already recorded, I have had the following pass through my hands :—A fine adult male, procured in the Calcutta Bazaar in 1907, but *where* it was taken the dealer could not tell me. A young female sent me as a specimen of the Eastern White-eye, from Chittagong, and shot on the coast. A young female shot by Mr. Moore in Lakhimpur in January 1904. Finally, two specimens shot by myself in the same district—one in March 1902 and one in November 1903. On the former occasion the bird was a single one in company with a flight of Crested Pochards ; on the second occasion there was a flock of about a dozen birds, but after I had shot one and missed another, as they were driven overhead, I never saw them again.

Possibly the most likely place for this bird to be met with in India would be the coast about the Gulf of Cutch, and north to Karachi, as the Scaup, by preference, is a sea bird. Such as are met with in India are doubtless “moving on” in hopes of getting to some coast eventually. Even in China they wander further south along the coast, and are far more commonly met with there than they are inland. When they are met with inland it will be generally found that they keep to great lakes, such as Lake Baikal, Lake Balkast, and Sea of Ural, &c. ; in these vast extents of water they can live, according to their wont, on the water altogether, neither taking to land nor air, except in cases of emergency, and spending their time diving for food or resting asleep on it just as they would on the sea itself.

Capt. Wall has recorded it from Oudh, and quotes abstracts from the Sporting Diary of the Rev. J. Gompertz, which shows that gentleman to have shot no less than 11 specimens between 1897 and 1904 inclusive, all in Oudh.

Although, once well away on the wing, the flight of the Scaup is fairly fast and strong, they are exceedingly slow and clumsy in getting off the water, their manner of so doing having been likened by various observers to that of the Coot ; that is to say, they rise very obliquely, splashing noisily along the surface of the water for some yards before getting clear of it, and, once clear, still taking some time to get up their speed. When driven, however, from a long distance, enabling them to get up their

speed, I found that they can work up a very creditable pace, indeed they quite deceived me, my first shot at driven birds being a yard behind, and even the second, which brought down a bird, was not enough forward.

On land they are, perhaps, even more awkward in commencing to fly than from the water, and it must be, indeed, severe pressure which can induce them to change their slow waddle into a quicker shuffle. They have the repute of being not wild birds, and of being fairly easy of approach on the water, and, when hard pressed, of frequently preferring to attempt escape by diving rather than by taking flight. So great, however, are their diving powers that they are perhaps as difficult to bring to bag as are the wilder birds which more quickly take to wing. Wounded only, it is as likely as not that the bird may escape, as it is almost impossible to follow its movements, and when it does appear on the surface, again disappears with such rapidity that it takes a gunner of some smartness to get a shot at it and finish it off.

The food of the Scaup is everywhere chiefly of an animal character. Inland, doubtless, it feeds to a certain extent on water-weeds, &c., these being mainly such as grow at some depth and are obtained by diving; but even here shell-fish, frogs, insects, form the greater part of its diet. When in its natural element, on sea, in creeks, estuaries, or along the coast, it is almost entirely an animal-feeder, subsisting on shell-fish, small fish, and other marine small life.

Its name is derived from its habit of feeding on mussels, the beds on which the masses of shell-fish lie being known as mussel-scaups, or mussel-scalps (Blanford and Newton), and in Norfolk I have heard both fresh- and salt-water mussels called sculps, though the term is usually applied more to the latter than to the former. Hume, quoting Montague, says that "Both the male and the female have a peculiar habit of tossing up their heads and opening their bills, which in spring is continued for a considerable time, while they are swimming and sporting on the water, and they emit a grunting sort of cry." The voice of the Scaup is thus described by Seebohn:—"Of all the cries of the ducks that have come under my notice, I think that of the Scaup is the most discordant. None of them are very musical, perhaps; but if you imagine a man with an exceptionally harsh, hoarse voice screaming out the word *scaup* at the top of his voice, some idea of the note of this duck may be formed. It is said that when this harsh note is uttered the opening of the bill is accompanied with a peculiar toss of the head. The ordinary alarm-note during flight is a grating sound like that made by the Tufted Duck."

Its flesh, as might be expected, is quite unfit, as a rule, for the table,

and the most flattering terms I have known applied to it are Macgillivray's to the effect that "it is not thought much of for the table, its flesh being rather rank."

The Scaup is one of the most northern breeding of the ducks, having been observed breeding, as already noted, at least as far north as lat. 70°. As to its breeding within Indian limits, this, in spite of Hume's young bird being caught in Kashmir, is most unlikely ever to be found to be the case.

The description of the nest, as given by various writers, differs greatly: one says it is a scanty affair of grasses and weeds, &c., without any down in it at all—a rare thing this with ducks' nests; whilst others say that the nest, though of few materials and very roughly formed, is yet well lined with down and feathers, not only enough to form the lining itself, but sufficient to make a bed in which the eggs lie quite covered.

Its position also seems to vary very much; as a rule, it is placed close to water in a depression under cover of some sort, or else in amongst fairly dense vegetation. At other times—this, it appears, but rarely—in a hole in the ground, and sometimes in the open amongst stones, where there is no cover. In the latter case, no doubt, it is in the bleaker parts, where vegetation close to water is scant, and where, also, there is not much to interfere with their breeding-arrangements. According to Dresser, "Not unfrequently several females deposit their eggs in the same nest; and Dr. Krüper states that in Iceland he once found twenty-two eggs in one nest. The eggs are deposited from the early part of June to the middle of July, and when the female commences to incubate she sits very close, not leaving the nest until the intruder is close to it. I possess a nest and seven eggs of this duck, taken by Mr. Meves in Oland, on the 5th July, 1871. This nest consists only of grass, without any down as lining, and the eggs are uniform greyish stone-buff in colour, and vary in size from 2.45×1.67 to 2.5×1.77 inches."

The only eggs I have ever seen were taken in Iceland on the 10th June; these are dull *café-au-lait*, with a grey tinge. In shape they are rather broad, very regular ovals, and the texture of the egg is much like that of the egg of *Nyroca africana*, but not, I think, quite so soft or porous. There is no gloss.

Dr. Paul Leverkühn informs me that Mr. Baer, of Neisse, in Silesia, found the Scaup breeding in Germany. Previously it had only been known to visit Germany in winter. Dr. Leverkühn himself obtained many specimens on the coast of the Baltic Sea.





THE TUFTED POCHARD.
Puligula fuligula

(40) **FULIGULA FULIGULA.**

THE CRESTED POCHARD OR TUFTED POCHARD.

Fuligula cristata, *Jerdon, B. I.* iii, p. 815; *Butler, Str. Feath.* iv, p. 31; *id. ibid.* v, p. 234; *Ball, ibid.* vii, p. 232; *Hume, ibid.* p. 496; *id. Cat.* no. 971; *Hume & Mar. Game-B.* iii, p. 277; *Hume, Str. Feath.* viii, p. 115; *Vidal, ibid.* ix, p. 93; *Butler, ibid.* p. 439; *Reid, ibid.* x, p. 85; *Davidson, ibid.* p. 326; *Barnes, B. of Bom.* p. 414; *Hume, Str. Feath.* xi, p. 347.

Fulix cristata, *Hume, Str. Feath.* i, p. 265; *Dauids. & Wend. ibid.* vii, p. 93.

Fuligula fuligula, *Salvadori, Cat. B. M.* xxvii, p. 363; *Oates, Game-B.* ii, p. 348.

Nyroca fuligula, *Blanford, Fauna B. I.* iv, p. 463.

Description. Adult male.—Whole head, neck, back, rump, tail, breast, wing-coverts, under tail-coverts, and innermost flanks black. On the head there is a certain amount of green gloss on the sides, and the crest and nape have purple reflections; the back, scapulars, and more or less of the wing-coverts have a very fine powdering of the white, so fine as to often require careful looking for before being found, and never enough to have any influence on the prevailing tint; primaries dark brown, the inner web of the first whitish at the base, fading into brown elsewhere, the white on each quill increasing in extent until, on the innermost, only the terminal half-inch is dark. In all the quills the definition between white and brown is gradual, not abrupt, the two colours gradually blending; outer secondaries white with black tips; inner secondaries black, glossed with green. Abdomen white, sharply defined from the breast, but more or less mottled near the black flanks. Irides bright yellow; bill deep slate, tipped black; legs dull lead-colour.

Length about 17 inches, tail 2.1 to 3.0, wing 7.6 to 8.5, tarsus 1.5; bill straight from front to tip 1.52 to 1.75, at widest point 0.86 to 0.90, and at narrowest 0.65 to 0.70; crest from 1.75 to 2.72.

Males.—"Length 16.6 to 17.2 inches, expanse 27.5 to 30.3, wing 7.8 to 8.5, tail from vent 2.5 to 3.25, tarsus 1.3 to 1.4, bill from gape 1.85 to 2.0. Weight 1 lb. 8 ozs. to 2 lbs. $\frac{1}{2}$ oz.

"In adults the bills vary from dull leaden to light greyish blue, the nail and extreme tip being black; the irides golden yellow; the legs and feet vary like the bill: there is often an olivaceous tinge, especially on the tarsus, the joints have usually a dusky tinge, the webs vary from dusky to almost black, and the claws from deep brown to black. As a rule, the colours of the bill and legs are duller and duskier in the female than in the male." (*Hume.*)

Adult female.—Similar to the male, but has the black replaced by brown, and the definition between the brown breast and the abdomen very much blurred and mottled. A bird given me from the Indian Museum, Calcutta, has the whole of

the lower parts rufescent, and they are mottled everywhere with pale brown, except on the very centre of the abdomen.

The colours of the soft parts are the same as in the male, but generally duller.

"Length 15·2 to 16·75 inches, expanse 26·7 to 28·7, wing 7·6 to 8·0, tail from vent 2·6 to 3·0, tarsus 1·2 to 1·4, bill from gape 1·81 to 2·0. Weight 1 lb. 5 ozs. to 1 lb. 12 ozs." (*Hume.*)

Crest about 1 to nearly 2 inches, rarely more than 1·5.

A very fine young male in my collection is like the adult, but has the breast weakly defined, has no gloss on the head, and has a white face extending back fully half an inch from the base of the upper mandible. In this bird, also, the white feathers of the outer secondaries have black shafts, and have also a narrow black margin to the outer webs.

"**Young in first plumage.**—Closely resemble the adult females, but are paler brown, especially on the chin and throat, and have no metallic-green gloss on the innermost secondaries; there are many white feathers at the base of the bill.

"**Males in first nuptial dress,** have white margins to the black feathers of the breast, a shorter crest, no green or purple gloss on the head, and a small white spot on the chin." (*Salvadori.*)

"**Males in moulting plumage** are intermediate in colour between males in first plumage and males in first nuptial plumage.

"**Young in down** are dark brown, shading into nearly white on the belly." (*Seeböhm.*)

Salvadori thus defines the habitat of the Tufted Pochard:—"Palæarctic Region from the Atlantic to the Pacific; in the Ethiopian Region it extends as far south as Shoa, and apparently breeds in the high lakes of Abyssinia; in winter in South China, Japan, and India, but not in Ceylon or Burmah; accidental in the Malay Archipelago (Philippines and Borneo), and in the Polynesian Islands (Marianne Isl. and Pelew Islands)."

As regards its distribution in India, Hume gives very full details. He writes: "Very rarely seen in the Himalayas, the Tufted Pochard is rather thinly distributed in the cold season in the Punjab and the Doab, is scarce in Rajpootana, more common in Rohilkhand and Oudh, and less so in the Central Provinces and Bundelkhand.

"In Sind it is not very abundant; in Kutch more; in Kathiawar and Gujerat, in the Central Indian Agency, Khandesh, and the Deccan fairly common.

"In Bengal, Cis-Brahmaputra, it has been noted from many districts, but I believe it to be rather scarce there, though my information on the subject is scant. Damant records it, and some of Godwin-Austen's people procured it from Manipur; but I have no information of its occurrence

east of Brahmapootra, whether in Assam, Kachar, Sylhet, Tipperah, Chittagong, or any portion of British Burmah; I do not doubt that it straggles into many of these, but the fact has yet to be ascertained.

"It occurs in places in very large flocks; in Chota Nagpur, the Northern Circars, and the Nizam's dominions, straggling by the way at times into Southern Konkan. It has been shot at Bellary, and certainly, though rare there, visits Mysore; but south of this I have heard of it nowhere in the Peninsula, except in the north of the Coimbatore district, nor has it yet been recorded from Ceylon. Here, too, however, our information is very imperfect, and stragglers will probably turn up in many districts whence the species has not yet been noticed."

Then in a footnote he says: "This species has not been recorded from Kashmir." Lately, however, in the 'Asian,' in the same bag as that to which I referred in a previous chapter as having been obtained by A. E. W. in Kashmir, two Tufted Ducks are recorded as having formed part of the bag. There can be little doubt that it occurs constantly, but not in large numbers, in that State. It is not common, but at the same time may be met with occasionally throughout Assam, Cachar, Sylhet, and Chittagong; Mr. R. S. Routh, Superintendent of the Hill Section of the A.-B. Ry., shot two fine specimens on the 21st November, 1898, in a large tank in the station of Haflong, Cachar; and I have an immature male in my collection, shot by one of my men in Cachar, as well as two young females. I have it recorded from Sylhet, and it is the most common of all the Pochards in Lakhimpur. It was plentiful at Dimagi and Sissi, and I saw it in all the rivers, Subanrika and smaller streams, about Patalipam and North Lakhimpur, its very black plumage making it very easily distinguishable. Recently it has been recorded as having been shot in Burmah, near Mandalay; and Oates, in 'Game-Birds,' records that out of the bag of 562 ducks already referred to as having been shot by Captain Johnson and party, no less than 122 were of this species. Major Rippon also informed him that this duck was to be found all over the Shan States, though Oates himself did not meet with it anywhere in Lower Burmah. It will doubtless prove to occur plentifully throughout the northern half at least of that province, and probably, in small numbers, as far south as the north of Tenasserim.

This Pochard is one that essentially requires open water, and in preference resorts to wide expanses of water of some considerable depth in the centre, though more or less weed and rush overgrown round the shores. Where such pieces of water are to be found, the Tufted

Pochard may be obtained in no inconsiderable numbers ; at the same time it is unusual to find them in any but small parties and pairs, and single birds are more often to be met with than even such. Sometimes, however, they do consort in very large numbers, *vide* Hume, who says : " single birds or small parties may be found on almost any broads in which the water is tolerably deep in some places, but the huge flocks in which they love to congregate are only met with on large lakes, such as I have above referred to.

" At the Manchar Lake I saw two enormous flocks. I have repeatedly seen similar flocks in old times at the Najjafgarh and other vast jhils in the Punjab, the North-West Provinces, and Oudh ; and I should guess that at the Kunkrowli Lake, in Oodeypore, there must have been nearly ten thousand, covering the whole centre of the lake."

Such flocks as these are, however, only to be met with in the provinces mentioned ; in the eastern provinces a flock of forty is very large, and about all we may expect to meet with.

Just as expert as are the rest of Pochards on or in the water, it excels the majority of these—perhaps not *N. baeri*—in getting away from it. It rises with less fluster, noise, and splashing than is caused by the rising of other Pochards, and also gets off the water more quickly and gets more quickly into its stride, if I may use such an expression. Indeed, when frightened, it flies at a great pace, nearly equalling the Pintail, and exceeding most other ducks. On land, however, feeble as are other Pochards, this, according to Finn, is worse still. He says, in the 'Asian' : " On land it moves more awkwardly than any other Pochard I know, hobbling as if lame in both feet."

However abundant it may be, the Tufted Pochard does not, as a rule, form a very large portion of a bag in a day's shoot. This is due to the difficulty, first, in approaching the birds—for they are decidedly wild and shy,—and, secondly, in getting a shot when once one has got within reach. If the bird does not escape at once by diving, swimming, or flight, it is sure to dive before, at any rate, the sportsman has time to get a shot, and once it has seen him and had its first dive it is very problematical as to whether he will ever get a shot again. It is worth remembering, should one come across a flock in any large piece of water, Hume's maxim that Tufted Pochards will not leave the water they are on until after dark. He gives one of his usual graphic descriptions of a shoot in which Tufted Pochards played the principal part, and describes how, after a fusilade

from ten guns, no more than five (!) birds were collected out of a huge flock of ducks diving about all round them.

Knowing their habits, however, he waited until he and his fellow sportsmen were going over the same beat the next day, and then, extending in a long line, they worked backwards and forwards, and this time the birds rising in front were, each beat, gradually forced to the end of the water.

After arriving at this they had to fly back overhead, and in this way they were accounted for to the tune of over sixty ducks. They are not to be often found on open tanks, whose shores are free of jungle, nor on rivers ; but I have once or twice seen pairs on the Megna, and at other times have met them on tanks absolutely free of all vegetation. The pair shot by Mr. Routh in Haflong were on an artificial tank with no vestige of water-plant about it, as it had not been a year in existence. I found also that when leaving and entering India, and during the month of March and early April and in October, these little ducks were quite common on all the hill streams and rivers where they debouch into the plains.

Their cry is said to be the typical, harsh, grating "*kir*" or "*kurr*," of the Pochard family ; but it is a silent bird on the whole, and seldom indulges in vociferations of any sort.

Its food is almost entirely animal, much the same, in fact, as that of the Scaup, but it is far more a freshwater bird, and far less a sea bird, than is that duck, though common enough on the coast-line along the greater part of its habitat. It is, of course, a poor article of food, though here, again, tastes differ, and some people say it is not bad. Hume, who was particular about his table ducks, said that he had found some "good enough," and that some sportsmen had told him that they were *excellent* !

They feed principally during the daytime, but migrate and move from one place to another after sunset. They do not ever appear to have been found feeding on land, but should they ever do so, the probability is that they only thus feed during the night.

The Tufted Duck breeds, as far as we know, throughout the northern portion of its range, and in some parts very far south. Thus it is known with comparative certainty to breed in some of the upland lakes of Abyssinia, in Southern Europe in many countries, and in Central Asia. The nest is typically rather a slight affair, made more of grass and bents, and less of reeds, rushes, and water-plants, than are most ducks' nests. The lining, which is generally very plentiful, is said by Dresser to be

of "Sooty brownish-black down, having all greyish-white centres." The nest may be placed either close to the water or actually at the edge, never, as far as I can learn from anything recorded, actually in the water itself. The water may be either fresh or salt, an inland lake far from the shore, or an estuary or creek of the sea itself; as a rule, the nest is placed amongst either grass or bushes, but sometimes quite out in the open, amongst stones, &c. This sort of situation is not, however, it would seem, as often selected by the Tufted Duck as it is by the Scaup, nor can I find any mention of its placing its nest in holes as does the latter bird.

Dr. Leverkühn sends me an interesting note on the breeding of this duck. He says, *in epistolâ*:—" *Fuligula fuligula* is a very common bird on the great lakes of Hungaria, Slavonia, Germany, and Bulgaria, and I have taken many of its nests during the month of May. The duck, when frightened and leaving its nest, covers the eggs with all the contents—which there may be at the moment—of her intestinal tractus; for the oologist it is hard work to clean them afterwards.

"One nest I found was covered in, in a very beautiful manner, by tips of the grass surrounding the nesting-place; one would have said that this particular duck had known the art of sewing, so finely had she joined the grass-helms together, probably with her bill."

Most naturalists note that the eggs only vary from six to ten in number, less, therefore, than many other ducks' clutches; but Seebohm says "the number of eggs is usually ten or twelve, but sometimes only eight are laid, and occasionally as many as thirteen." Dresser describes the eggs as uniform pale olive, green, or greenish-buff in colour, smooth and polished in texture of shell, and in size average about 2.3×1.65 inches. Wolley's egg, figured by Hewitson, is of exactly the same size.

Morris figures the egg as exactly like that of the Scaup, but longer and proportionately narrower. In colour it is rather a bright pale buff.

As regards their breeding, he says: "These birds breed along the stony shores of the sides of the inland waters, among the cover of vegetation, more or less thick, with which they are usually bordered.

"The receptacle for the eggs—for it can hardly be called a nest—is composed of stalks and grasses.

"The eggs vary in number from eight to ten. They are of a pale buff colour with a tinge of green.

"The male bird leaves the female after she has begun to sit."

Oates records the measurements as being between 2.15 and 2.4 inches in length, and 1.55 and 1.65 in breadth.

My own eggs varied a good deal more than these, as my largest is 2.46×1.68 inches, and my smallest 2.15×1.50 .

Finn's remark on the cross-breeding of this bird is worth noting and remembering by sportsmen who get hold of birds beyond their power to discriminate:—

“It breeds more freely in captivity than do Pochards in general, and in the London Zoological Gardens crossed in 1849 with the White-eye, the resulting hybrids continuing to breed either *inter se* or with the original parents for more than ten years—a fact to be remembered in dealing with doubtful Pochards, which should therefore, whenever possible, be submitted to some authority for identification.”

Genus CLANGULA.

The genus *Clangula* is a very small one, containing only three species of birds which range throughout the Northern Hemisphere. Of these three, only one, *Clangula glaucion*, reaches India, and even this only occurs with extreme rarity. The most noticeable thing in this genus, and one which at once separates it from all its closest allies, is the position of the nostrils, which are rather nearer the tip than the base of the bill, the position being well shown in the woodcut in Blanford's 4th vol. of the 'Fauna of British India.' In many respects in its anatomy it closely approaches the Mergansers, and it is a sort of link between them and the more typical ducks.

(41) CLANGULA GLAUCION.

THE GOLDEN-EYE.

Clangula glaucion, Hume, *Str. Feath.* iv, p. 225; *id. ibid.* vii, pp. 441, 464, & 505; *id. Cat.* no. 961 bis; Hume & Mar. *Game-B.* iii, p. 185; Reid, *Str. Feath.* x, p. 85; Stoker, *ibid.* p. 424; Barnes, *B. of Bom.* p. 413; Salvadori, *Cat. B. M.* xxvii, p. 376; Blanford, *Fauna B. I.* iv, p. 464; Yerbury, *Jour. B. N. H. S.* xiii, p. 533; Macdonald, *ibid.* p. 700; Stuart Baker, *ibid.* xv, p. 348.

Clangula clangula, Oates, *Game-B.* ii, p. 358.

Description. Adult male.—"Head and upper neck dark glossy green, the feathers on the crown and nape somewhat elongated; chin and throat black; a roundish white patch on the cheeks near the base of the upper mandible; lower neck, breast, and underparts white; on the sides of the vent the feathers have the bases slaty grey showing through; feathers of the flanks edged above with black, the longer ones on both webs; back, rump, and upper tail-coverts black; inner scapulars black, the outer ones white, longer scapulars with a white band along the middle; wings black, with a large white patch covering the central wing-coverts and the outer secondaries; the inner secondaries black; under wing-coverts greyish black; tail blackish grey; bill bluish black; irides golden-yellow; feet orange-yellow, the webs dusky. Total length about 18 inches, wing 8.9, tail 4, culmen 1.4, tarsus 1.45." (Salvadori.)

"Bill black in the male . . . the eyes are yellow and the feet yellow with black webs." (*F. Finn.*)

"The irides are bright yellow in the females and young males, reddish or orange-yellow in old males, white or very pale yellow in the quite young birds. The naked edges of the eyelids reddish dusky; the legs and feet vary from pale yellow in the young to intense orange in the old; the colour is always bright and pure; the webs (including that of hind toe), nails, and a spot on each of the toe-joints black or dusky. The bill of the old male is bluish or greenish black, rather duskier and duller coloured in the old females and young, and occasionally in these latter, often in the former, and very rarely in the old males, with a larger or smaller yellowish-red or orange spot or bar near the tip of the upper mandible, which in some forms the terminal band at the tips of *both* mandibles, never, however, including the nail, which always remains black or dusky." (*Hume.*)

Female.—"Head and upper neck hair-brown; a dull white collar round the lower neck; upper parts blackish; mantle, scapulars, and upper wing-coverts with pale greyish edges; breast greyish, with the edges of the feathers whitish; lower parts white; sides and flanks dull grey, the feathers edged with white; median wing-coverts brown tipped with whitish, the greater ones white tipped with brown; outer secondaries white; the white on the wing is defined by the brown band at the tip of the greater coverts; quills dusky brown; tail dull greyish: bill brownish-black, in some specimens the tip, except the nail, is yellow; irides and legs and toes as in the male. Total length 17 inches, wing 7·7, culmen 1·35." (*Salvadori.*)

"The bill is blackish in the female and young, sometimes with a yellow patch at the tip." (*F. Finn.*)

Females.—Length 15·7 to 16·5 inches, expanse 26·3 to 28, wing 7·5 to 8·25, tail from vent 3·0 to 3·4, tarsus 1·22 to 1·35, bill from gape 1·12 to 1·19. Weight 1 lb. 7 ozs. to 1 lb. 14 ozs." (*Hume.*)

"**Young in first plumage** resemble adult females, but are duller in colour; the pale collar round the neck is much more obscure, the grey feathers on the breast have white margins.

"**Males in first nuptial dress** have less white on the scapulars, the white on the hind lower neck is mottled with brown, as is also the white spot at the base of the bill.

"**Males in moulting plumage** resemble adult females, except that they retain the white wing of the adult male.

"**Young in down** are dark brown on the upper parts, and paler brown on the breast and flanks, shading into white on the throat and into pale grey on the belly." (*Salvadori.*)

This is a northern form of duck, breeding in Northern Europe and Asia, and in America from Maine and Canada northwards. In winter it migrates to Southern Europe, and rarely only into extreme North Africa. In Asia it occurs as far south as Persia, China, and Japan, and as a straggler enters Northern India and Southern China. In America it wanders as far south as Mexico and Cuba.

The occurrence of the Golden-eye in India is only, as I have already

said, as a straggler, and a very rare one too; all the notes as to its occurrence in 'Game-Birds' are that Sir A. Barnes got it on the Indus in Sind nearly sixty years ago, and that Dr. Bonavia obtained a fine male about 1870, which was captured by fowlers near Lucknow.

After 'Game-Birds' was written, Hume evidently got other specimens, for in the British Museum are two specimens got by R. N. Stoker, which were presented by Hume with the rest of his collection. These two birds were obtained, one at Hassanpur, and one at Ghazi, both in the month of December. There is so little on record about this duck in India, and 'Stray Feathers' is now so hard to get, that I reproduce the greater part of Stoker's notes on his specimen.

"I have now to record shooting near Ghazi, on the Indus, a female Golden-eye (*Clangula glaucion*). I saw one drake and four ducks, but unfortunately only succeeded in getting one of the latter.

"This measured: length 15·75 inches, expanse 26·5, tail 3·66, bill from gape 1·66. Weight 1 lb. 5 ozs.

"The irides were a bright pale yellow; the feet bright yellowish orange, with dark blackish webs; bill black at base and tip, with a medial yellow band about 0·25 mm. in width."

In the same letter, in a P.S., he continues:—"Since this was written I have shot another Golden-eye, a bird of the year. . . . A third bird, precisely like this second, was shot by an officer here, but hitherto the drake has resisted all our attempts to assassinate him.

"I showed the first bird to a very intelligent native at Ghazi, and he assured me that they appeared there every year regularly, and that three years ago he shot one. I am certain that I shot a duck of this species some three years ago. It puzzled me at the time, but now I have no doubt what it was."

Then, in a second letter, Mr. Stoker again writes:—"Since I last wrote, I have succeeded in obtaining a fine drake Golden-eye, which I am sending you.

"There were four of them together in a little stream opposite a village of Hassanpur.

"The natives called them 'Burgee,' the 'bur' pronounced as in burrow. Burgee, I believe, only means patches of black and white.

"Mr. Barlow informs me that these ducks come to Ghazi every winter.

"This drake measures: wing 9·0 inches. . . .

"We all said what a heavy bird, but it only weighed 1 lb. 10 ozs.,

which is 6 ozs. less than the lightest weight given by Hume for an adult male.

“ The stomach contained fish, weeds, and sand.

“ With this drake was procured a female similar to those formerly sent. It was wounded, and was put in a cage, and unfortunately was allowed to escape.

“ We may now get set down the Garrot or Golden-eye as a regular winter visitant to the Punjaub portion, at any rate, of the Indus, and as Barnes procured it near the mouth of the Indus, it most probably occurs throughout the length of that river. But can it be confined to the Indus? Surely, if properly looked for, it will be discovered in the Chenab and other Punjaub rivers. Is it purely a river duck with us, or will it also occur in jheels? Other sportsmen in the Punjaub must help us to settle these questions.

“ P.S.—My last Golden-eye is a young female, weight 1 lb. 3 ozs. . . . it was seen with a *number* of others on a little pool. There were no other ducks about.”

Thus Stoker seems to have got no less than five specimens, and a sixth was got by an officer whom he does not name. Barnes got one other, and these are all that had hitherto been recorded; but in consequence of my noting in the original article on this duck in the B. N. H. S. Journal to the following effect—“None have been since met with, so that it looks as if Stoker’s queries as to its regular appearance must be answered in the negative,”—Col. Yerbury wrote to the Journal (*in loc. cit.*) as follows:—“In the Chack Plains, on the banks of the Indus above Attock, the Golden-eye is a regular, and by no means rare cold-weather visitant.

“On referring to my old Shikar diary, I find the following records regarding it:—

- I. Azgar, 26th December, '85 (2 spec. ♀ ♀).
- II. „ 27th December, '85 (1 do. ♂ immature).
- III. „ 8th February, '86 (2 do. unsexed).
- IV. River Indus between Attock and Azgar, 24th February, '86
(1 spec. unsexed).

“On the latter date I was in company with Dr. Stoker, and we shot up stream from Attock along the banks of the river to Gaziabad, returning the next day to Attock by boat.

“I can find no records of shooting any specimens during the cold

weather of 1886-87, but I think this was probably due to my having refrained from shooting them, the duck being useless for the table.

"A brief description of the locality affected by the species may be of interest. The river Indus, after having been much narrowed above Torbela, by the near approach of the mountains on each side, widens out at the Chack Plain to a considerable breadth (possibly 6 or 7 miles in places), to be again constricted at Attock. In the Chack Plain, where the river is widest, there are numerous islands in the bed of the stream, and it is the channel between the islands and the banks of the river that the Golden-eye lies. A similar widening of the river takes place below, further south, below Kalabagh, and there, probably too, the species will turn up.

"I never met with this species away from the river, and, like Dr. Stoker, generally found it in flocks of four or five individuals. . . . The most interesting piece of information given me by my informants was the short period they considered the species to be away from the neighbourhood; they said it was absent only during three months—April, May, and June,—but I had no opportunity of verifying this statement."

In 1903, on the 25th April, Mr. Morton Eden sent me a duck to identify which had been shot by him in Sadiya, Lakhimpur district. With this skin he sent the accompanying note:—"I think it is a Golden-eye . . . it is not a rare bird above Sampura." In answer to a letter from me, Mr. Morton Eden then sent me the following interesting account of what he had observed:—"I shot this bird on the 3rd Feb. last, a few miles above Sampura. I was coming down stream at the time, when the bird, which was by itself, got up a long way down and flew up stream, passing my boat at a distance of some fifty yards, and I fired at and dropped it.

"Above Sampura, and up to and beyond Sidharoo, the Golden-eye is not at all uncommon, and I must have seen a hundred or more last January and February. They occur either singly, or in small flocks of eight to ten birds; they are wild, and will not let a boat come anywhere near them, but rise a hundred to a hundred and fifty yards off, and generally make a fairly long flight before again settling.

"They always flew off when disturbed, and I never saw them try to escape by diving.

"In the early morning I saw them on several occasions fighting with Mergansers. Their flight is rapid and much like that of the Tufted Pochard, but not quite, I think, so rapid as that of the White-eyed Pochard.

"I may mention that I shot a Golden-eye about ten miles from here (Sibsagar) in the cold weather of 1885-6. I sent the skin down to Calcutta, and I think they now have it in the Indian Museum."

The rivers mentioned by Mr. Morton Eden in the earlier part of his notes are in the Sadiya sub-division of Lakhimpur, and are practically hill-rivers of rapid-running clear water. They are of considerable size, even where they just debouch from the mountains, and are the haunts of Golden-eyes, Mergansers, Ibis-bill, and probably many other rare water-birds.

I have, since Mr. Morton Eden sent me his notes, seen the Golden-eye on several of the hill-streams in the same district. Upon the Subansiri, a magnificent stream of deep still pools and madly-running rapids, I saw this little duck nearly every time I visited it in the cold-weather months, and what I saw fully agreed with his remarks. Only on one occasion did I get really near to it, and this was once when I was stalking a bull buffalo. The buffalo had crossed a back-water and was standing on a far bank, and I approached the edge of the water on my side with the greatest caution, and halted behind a bush growing almost in it, in order to reconnoitre. The buffalo went off before I could get a shot, but I was rewarded for my care in seeing six Golden-eye playing about in the water within ten yards of me. They were chasing one another about in every direction, and scattering the shallow water in clouds about them. It was not deep enough to admit of long dives, and the birds principally got about by skittering along, half swimming, half flying along the surface of it. Every now and then two birds would stop and begin bowing and bobbing to one another; this would continue for a minute or two, and then away they would go and join in the rough-and-tumble games of the other birds. In the course of their chases of one another they would sometimes come within a yard or two of where I was hiding, but it was not until I had watched them for a good half-hour that one of them saw me, and was on the wing at once with a loud squawk, at once repeated by the other birds as they followed suit. This was the only loud noise they made, though they made a very faint sound, half chattering, half quacking, as they played together.

I also shot a female Golden-eye at the Hinjri bheel in North Lakhimpur, on the 18th December, 1901. This bird was in company with a flock of Gadwall, and I saw no others either on this or on any of the adjoining bheels. It flew well with the Gadwall, but looked conspicuously smaller, and when I fired I thought it was merely a White-eyed Pochard.

In its actions and habits the Golden-eye seems to be very much like the Pochard. Like them, it is a wonderful bird on the water as well as in it, and what I have said of the Tufted Pochard and its predilection for diving and swimming, and, if possible, escaping by these means rather than by flight, would equally well apply to this bird. Like the Pochard, too, it is slow off the water, and rises at an oblique angle with great splashing and commotion. Macgillivray says that it is capable of rising off the water at one spring with the help of a breeze, *i. e.* probably with a strong head wind, which, getting under it, would lift the bird at once.

Unlike the Pochards, however, it is credited with being fairly active on land, and the author just quoted says that they sometimes repose on spits of land.

As are the Pochards, so is this bird found alike on salt and fresh waters, but there is no doubt that it prefers fresh water to salt. It would seem that open waters are preferred to small enclosed pieces, and deep clear water to shallow vegetation-covered pools and swamps. This, of course, we should expect to be the case with a diving duck whose food consists, as the Golden-eye's does, almost entirely of animal matter procured by diving.

It is said to feed on "Testaceous mollusca, crustacea and fishes," also on water insects and grubs, and, but not often, also on vegetable food, principally deep-water weed-roots and similar articles.

Its flight is swift and strong, and Macgillivray says: "They fly with rapidity in a direct manner; their small, stiff, sharp-pointed wings producing a whistling sound, which in calm weather may be heard a considerable distance." Sir Ralph Payne-Gallwey also notes: "The wings of this species are so short and stiff in proportion to its weight and size, and are forced to beat so quickly to project its body, that a distinct whistle may be heard as it flies by." He also writes anent their diving powers: "Scaup or Pochard that may have been under water at the moment of firing, after finishing their dive for food at leisure, will startle the fowler by rising close to him as he pushes up to gather his cripples. Golden-eyes seem to know when their companions are leaving the surface in flight, and will at once spring up to follow and join the rest. I never knew them incautiously rise within range after a shot, like the other species alluded to."

Mr. John Cordeaux ('Birds of the Humber District') observes that when diving they remain immersed on an average from 45 to 50 seconds.

Macgillivray describes the cry of this bird as "a mere grunting croak, and is never heard to any considerable distance ; the epithet *Clangula* given to it by the earlier ornithologists had reference, not to its voice, but to the whistling of its wings."

The number of the flocks seems to vary greatly ; here in India no large ones are likely to be seen, but it will be noted that, even on the Indus, Stoker and Yerbury met with small flocks, not pairs and single birds, and, where common, it is said sometimes to assemble in flocks of some hundreds.

Normally the Golden-eye breeds in hollows in trees, or, less often, in holes in the ground, in banks or rocks, but sometimes it makes a nest on the ground in the same manner as most other ducks. In the latter case the nest is usually rather scanty and ill-formed but with a thick lining.

Seeböhm, writing of this species, observes :—" But the most remarkable fact in the history of the Golden-eye is its habit of occasionally perching on the bare branch of some forest tree, and of discovering a hole in the trunk, sometimes quite a small one, but leading to a hollow inside, where it deposits its eggs on the rotten chips of wood without any nest, like a Woodpecker. These breeding-places are sometimes a considerable distance from the ground. In the valley of the Petchora I have seen one at least twenty-five feet from the ground ; but one I saw in the valley of the Yenesay was not more than half as high. It has been seen to convey its young one by one down to the water pressed between its bill and its breast."

Dresser's remarks *re* the breeding of the Golden-eye have been already quoted by Hume, and I again reproduce part of them :—

" In the north of Finland, in Sweden, and in Norway, it nests in hollow trees, either near to or at some distance from the water, and very frequently in the nest-boxes which the peasants hang up for water-fowls to breed in. These are frequently hung up close to the peasants' huts ; and even then the Golden-eye will nest in them. The bottom of a hollow tree or nest-box is neatly lined with down ; and on this soft bed the eggs, which vary in number from ten or twelve to seventeen or even nineteen, are deposited. When hatched, the young birds are carried by the female in her beak down to the ground, or to the water, one after another being taken down until the whole brood is taken in safety from the elevated breeding-place, and I have been assured by the peasants that this always takes place in the dead of the night. The eggs of this duck are dull greyish-green, uniform in tinge, and rather glossy in texture of shell, oval

in shape, and in size average about 2·4 by 1·55 inches ; and the down with which the nest is lined is sooty greyish-white, the tips of the down being rather darker than the central portion."

It would seem that, in the majority of cases, the Golden-eye selects sites by fresh water for breeding-purposes, but they also sometimes breed on or near the coast.

Oates describes the nest-down as pale lavender-grey with paler centres.

The British Museum eggs vary in length from 2·1 to 2·4 inches, and in breadth between 1·55 and 1·75 inches. Oates says that in colour they are greyish-green of different shades.

I have two clutches of eggs of this duck in my collection, both of which I owe to the generosity of Herr Kuschel, of Breslau. The first clutch, which are marked "Sarepta, Süd-Russland, 4th May, 1889," are the greenest ducks' eggs I have ever seen, quite a vivid stone-green, though the three vary a little, *inter se*, in brightness of tint and intensity of colour. The surface is very fine and close with an extremely smooth surface, having a strong gloss. The shape of two of these eggs is a very regular broad oval, of the third a narrower oval with one end decidedly compressed and smaller than the other, but not at all pointed.

These three eggs measure 2·21 by 1·6 inches, 2·20 by 1·72, and 2·12 by 1·62.

The other three eggs are similar, but less intensely green.

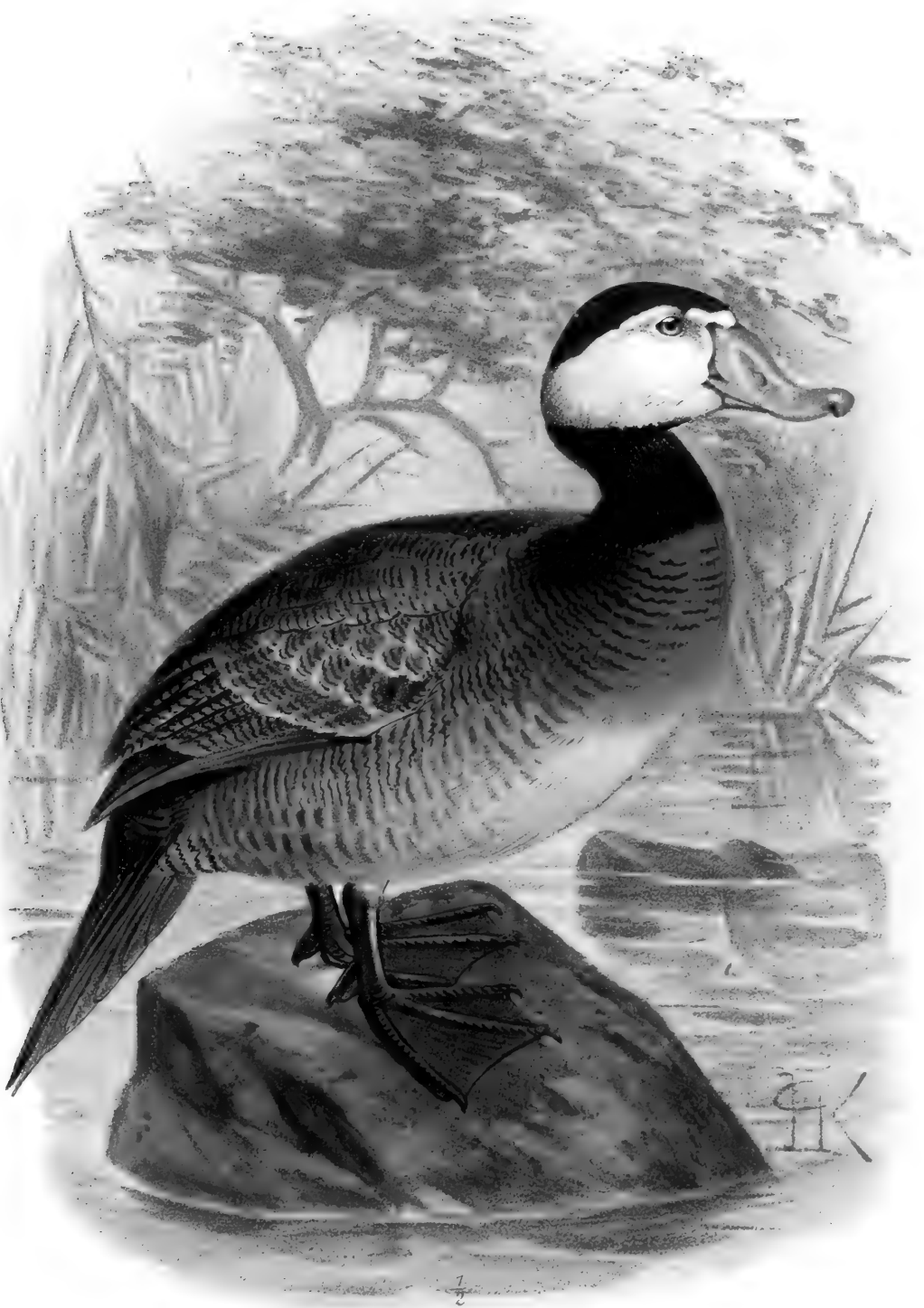
Morris says :—"The Golden-eye builds in the vicinity of lakes and rivers, giving a preference to the latter, particularly such as flow over falls and rapids. The Laplanders place boxes with holes in them in the trees in these localities for the birds to build in, and thus procure the eggs, for the boxes are sure to be resorted to for the purpose of laying in.

"The nest is made of rushes and other herbage lined with down. Mr. Hewitson found one in a hole in a tree, ten or twelve feet from the ground.

"The eggs are of a greenish hue, and from ten to fourteen in number."

The egg depicted by Morris, however, is of a greenish stone-colour, the green tint by no means very prominent. It is also more pointed at the smaller end than in any egg I have ever seen.





THE WHITE-HEADED OR STIFF-TAIL DUCK.
Erismatura leucocephala.

J. Green. Chroma.

Subfamily ERISMATURINÆ.

The one great distinctive feature of this subfamily is the remarkable tail, of which the eighteen feathers are stiff and hard, very much as are the feathers of a Woodpecker's tail.

The subfamily contains four genera : *Thalassiornis*, confined to South Africa ; *Nomonyx* to Tropical America ; *Biziura*, which is only found in Australia ; and, finally, *Erismatura*, which is almost cosmopolitan.

The first three genera consist of but one species each ; but *Erismatura*, the only genus in which we are interested, has no less than seven, one of which, *E. leucocephala*, extends into India.

This bird has, in addition to the remarkable tail, another feature almost equally remarkable, viz. the swollen base to the bill, which extends forward as far as the nostril. The nail is also very small and is bent inwards ; the wing very small ; and the feet very large and powerful, with the lobe to the hind toe very fully developed.

(42) ERISMATURA LEUCOCEPHALA.

THE WHITE-HEADED OR STIFF-TAIL DUCK.

Erismatura leucocephala, *Hume & Mar. Game-B.* iii, p. 289 ; *Hume, Str. Feath.* viii, p. 456 ; ix, p. 296 ; x, p. 158 ; *Salvadori, Cat. B. M.* xxvii, p. 442 ; *F. Finn, P. A. S. B.* 1896, p. 62 ; *Sherwood, Jour. B. N. H. S.* xi, p. 150 ; *Unwin, ibid.* p. 169 ; *Macnab, ibid.* xiii, p. 182 ; *Blanford, Fauna B. I.* iv, p. 466 ; *Oates, Game-B.* ii, pp. 374, 375.

Description. Adult male.—"Crown black ; forehead, sides of the head, including the space above the eye, chin and nape pure white ; below this white the neck all round is black ; lower neck and breast chestnut-red, with narrow blackish bars ; back, scapulars, sides, and flanks reddish chestnut, more or less buffish, and finely and irregularly vermiculated with blackish ; upper tail-coverts deep chestnut ; underparts, below the breast, reddish buffy white ; wings brown-grey, the wing-coverts and secondaries finely vermiculated with buffy white ; under wing-coverts grey, the central ones whitish ; axillaries white ; tail blackish ; bill blue ; iris dark brown ; feet ashy brown, with the webs black.

Total length about 18·5 inches, wing 6·5, tail 4·5, culmen 1·9, tarsus 1·3." (*Salvadori*.)

"Total length about 18 inches, tail 3·5 (3 to 4·5), wing 6·3, tarsus 1, bill from gape 1·9." (*Blanford*.)

"**Females and young males** have only the chin, lower cheeks, and a stripe from above the gape, running back under the eye towards the nape, white, rest of the head black mixed with rufous; the upper tail-coverts are like the rest of the upper parts, and the breast is dull rufous without black bars. Otherwise the plumage resembles that of adult males. Some specimens are much more rufous than others." (*Blanford*.)

Captain Macnab gives the dimensions of a female as follows:—"Length $16\frac{1}{2}$ inches, wing $6\frac{1}{2}$, tail from vent $3\frac{3}{4}$, tarsus $1\frac{3}{8}$, hind toe and claw $2\frac{3}{4}$. Bill at point $1\frac{3}{4}$, bill from gape $1\frac{7}{8}$."

"Bill dull plumbeous; iris dark brown; legs plumbeous black." (*Salvadori*.)

Young male.—"Very similar in plumage to the old female, only somewhat more ruddy on the back." (*Salvadori*.)

Young in down.—"Brown-grey; upper part of the head and cheeks dark brown; a streak below the eye, from the base of the bill to the nape, throat, and sides of the upper part of the neck dull greyish-white undulated with dusky; a whitish spot on each side of the rump just below the wings; edge of the wing and under wing-coverts whitish." (*Salvadori*.)

The White-headed Duck inhabits the countries surrounding the Mediterranean, and extends thence into Western Central Asia, and, according to Finsch, as far north as Southern Siberia, and also, as a straggler only, into Germany and Holland, being, over the greater portion of its range, either resident or only locally migratory.

In India it is undoubtedly a very rare duck. When Hume and Marshall published the 'Game-Birds of India,' the only record of the Stiff-tail Duck was the following:—"On the 20th October, 1879, Col. O. B. St. John, R.E., at that time Governor, I think, of Kandahar, shot a couple of ducks, of a type quite unknown to him, in the Jumeh River, near Kelat-i-ghilzai. These ducks proved to be an immature pair of the White-headed Duck."

Since this was written, however, there have been further rather numerous records of this duck. In 'Stray Feathers' (*in loc. cit.*) are the following:—

Mr. Field writes of a bird sent to Mr. Hume:—"I shot this bird on the 28th October at the 'old nullah,' about a mile from the Civil Station of Ludhiana, Punjab. It was sitting alone in a pool. I stalked up close behind some reeds, and then showed myself, expecting to see it fly. All it did was to cock its little stiff, thin, pointed tail, and swim off

in a quiet way for some ten yards. Its appearance, whilst swimming with its tail upturned, was most peculiar. I tried to frighten it into flying, but it would not rise ; so I shot it whilst swimming."

Mr. Hume thought records of this bird would soon come to hand after this was written, and with reason, for " within a few months of this prediction Mr. F. Field shot an immature bird of this species close to the Civil Station of Ludhiana. This was on the 28th October, 1880." (The bird already recorded.) " On the 21st January, 1882, Mr. Chill obtained an immature male of this species near the Najafgarh jheel (approximately lat. 29° N., long. 77° E.), and now, again, another near the same locality on the 28th October of the same year.

" Since this was written, Mr. Lean, of the 5th Bengal Cavalry, informs me that he has just shot a duck of this species in the Philibheet district."

Again, in the same volume of 'Stray Feathers,' appears a note by Mr. Chill, dated 8th February, 1883 : " On the 27th December last, I sent you in a tin box an *Erismatura leucocephala*. Since that I have managed to purchase two more of that species—one a cat took away, and the other I have got stuffed." These were apparently got near Faruknagar, near Delhi.

About this time (February 1883) Mr. Bomford also got a specimen on the Indus, at Multan, Keengurh.

From this time none are recorded until Lieut. Burke shot one at Halkote in February 1891.

The next recorded specimen was not met with until almost exactly two years later, when, in the 'Proceedings of the Asiatic Society of Bengal,' occurs the following note by Mr. Finn :—" (*Erismatura leucocephala*.) The present individual was sent to the Editor of the *Asian* newspaper by Captain H. R. Davis, who stated (*Asian*, Feb. 14th, 1896) that it was shot by Captain E. D. White, 52nd Light Infantry, at Bettiah, near Hardoi, between Lucknow and Bareilly. It is in heavy moult and quite incapable of flight, which, considering the time of its occurrence, is rather surprising, and almost looks as if the species might be somewhere resident within our limits."

It is mentioned in the list of birds in Mr. W. R. Lawrence's recently published work on the 'Valley of Kashmir' as having occurred in that country.

Yet again, in 1896, but on December 27th, Major J. C. P. Onslow, R.E., shot two, and Mr. H. B. Campbell one of these ducks, in the Ganges, Kadur, about twenty miles south of Kadur.

Col. Unwin reports this little duck as having been obtained several times in March 1907 in Kashmir, but gives no details of what specimens were secured ; and prior to this, in the 'Asian' of the 8th February, 1898, A. E. W. recorded having shot three Stiff-tail Ducks in that State amongst a vast number of other birds shot at the same time. Captain Macnab, I.M.S., records shooting a female of this species at Mardan, Peshawar, in November 1899.

Finally, Finn, again in the columns of the 'Asian,' says that twice, to his knowledge, this duck has been obtained in the Calcutta Bazaar.

There is also a specimen in the British Museum, obtained by General Kinloch in Peshawar. This, to the best of my belief, exhausts the list of the Stiff-tail Duck's appearance within our limits.

Of the birds whose age is recorded, only two would appear to have been adult birds : the male got at Peshawar and the female at Ludhiana.

It will be noted, also, that all the birds were obtained between the 20th October and the 8th February, and whilst the bird shot at Hardoi in January was in heavy moult, none of the others, in so far as we know, appeared to have been moulting at all. Therefore it is very doubtful whether this particular specimen had not been indulging in an abnormal moult. I do not consider it of any weight in reference to the bird being a resident or otherwise, all that we know at present pointing strongly to the fact that it is *not* resident. There is, however, no reason why this duck should not breed in Kashmir, which is quite far enough north ; and it is to be hoped that anyone working the water-breeding birds of that State will bear this in mind.

As regards its habits, we have very little on record as far as India is concerned. Finn notes :—" In habits the Stiff-tail resembles a grebe rather than a duck. It is more ready to dive than to fly, swims low with its tail raised, and it is said to be unable to walk—*though this I doubt*, though I have only had a cripple to study. This bird resembles a grebe in its remarkable tameness."

Captain Sherwood writes in the B. N. H. S. Journal :—" The bird was very little longer, if any, than a Common Teal, but much bigger, and presented a stumpy appearance, very ugly and ungainly. The wings were hardly more than 6 inches in length. The birds were shot in deep water, in a nullah, which they refused to leave after being put up, and after a short swift flight they settled again."

Some interesting notes are also given of the female already referred to as having been shot by Captain Macnab. He says :—" On getting closer,

however, though its head and the carriage of its head gave it the appearance of a duck, its tail, which it carried cocked at right angles to its body, and its habit of constantly diving and remaining under the surface for a considerable time, led me to doubt if it was a duck at all. . . . I determined to shoot it for the sake of identification.

" . . . As I approached, a hawk came on the scene and hovered over it, evidently imagining that it had found its breakfast ; and I sat down to see what would happen, and in order to watch the bird more intently before shooting it. What did happen was that whenever the hawk poised itself in the air preparatory to attacking, the duck dived in continually, and on reappearing after some twenty or thirty seconds immediately disappeared again, keeping all the time very much in the same place.

" After some five minutes of this, the hawk went off disappointed, and I now approached nearer still. . . . It was swimming very low on the water ; . . . its tail was carried, when swimming, always at a right angle to its body ; . . . when it dived, the tail was straightened out, and then appeared much longer. . . . It would not rise as I came nearer, but merely swam away from me, diving every now and then.

" In this tank Major Barton procured a male, in December 1901, of which he remarks : ' It came up several times, only showing its head and neck, the body and tail remaining under water.' "

These brief notes agree well with what has been written on the bird as it shows itself in Europe. From this it would appear that, whilst the bird is a wonderful swimmer and diver, it is almost helpless on land, and though of very quick flight it is very loath to take to wing, not rising until absolutely forced to do so, and then only flying for a very short distance, after which it resettles, and is then harder than ever to again get off the water.

It has, according to Naumann, the power of swimming in the water with only head and neck projecting, in the same manner as the birds of the genus *Plotus* and the Cormorants do.

Most authors agree that it swims with its tail upright, as observed by Finn, Chill, Field, and others in India ; but Chapman and Buck, in their ' Wild Spain,' give quite a different description :—

" The most extraordinary wild fowl we ever met with—gambolling and splashing about on the water, chasing each other, now above, now beneath its surface, like a school of porpoises ; they appear half birds, half water-tortoises. . . . Presently the strangers entered a small reed-margined bight, swimming very deep, only their turtle-shaped backs and heavy heads in sight ; . . . with small wings like a Grebe, and long stiff

tails like a Cormorant : the latter, being carried under water as a rudder, is not visible when the bird is swimming.”

It is a freshwater species, and, as far as I can ascertain, does not haunt coasts and salt water.

It breeds also inland on lakes and marshes, and also on small ponds, placing its nest in amongst dense herbage at the edges, and always well concealed. It is a typical duck's nest, containing perhaps more wet weeds and rotten material in the base than do other ducks', but, like them, well-lined with down, which in this case is said to be pure white.

The eggs vary from six to ten, are a chalky white in colour, often much discoloured and stained, very large for the size of the bird, and remarkable for their very rough surface ; so rough indeed is it, that this egg is chosen to represent those having rough surfaces in the National Collection of typical eggs.

A few eggs are said to have a very faint green tinge.

The length varies between 2·6 and 2·8 inches, and the breadth between 1·95 and 2·05 inches. Most eggs are almost perfect ellipses, a few having one end rather smaller than the other.

Subfamily MERGINÆ.

This subfamily is at once distinguishable from all others by its bill, which differs very greatly from the shape most generally considered typical of a duck. Instead of being considerably depressed in the ordinary manner, it is actually compressed, and instead of having the usual lamellæ along the sides has regular tooth-like serrations on the edges of both upper and lower mandible. This last characteristic suffices to distinguish the Merginæ from the Merganettinæ, a subfamily which has neither teeth nor serrations, but which is not represented in India.

The Merginæ consists of two genera only, as represented in India, with one other (*Lophodytes*) confined to North America.

Key to Genera.

- a. Culmen shorter than tarsus, under 1·5 inches; wing
about 7 to 8 inches *Mergus*, p. 261.
- b. Culmen longer than tarsus, over 1·9 inches; wing
about 9 to 11 inches *Merganser*, p. 268.

Genus MERGUS.

The genus *Mergus* contains but a single species, the well-known Smew (*Mergus albellus*). Its curious narrow beak and its much smaller size than either of the Mergansers will at once serve to distinguish it from all other species of duck found in India.

(43) **MERGUS ALBELLUS.**

THE SMEW.

Mergus albellus, *Salvadori, Cat. B. M.* xxvii, p. 464; *Blanford, Fauna B. I.* iv, p. 467; *Oates, Game-B.* ii, p. 413; *Rattray, Jour. B. N. H. S.* xii, p. 348.

Mergellus albellus, *Jerdon, B. I.* iii, p. 818; *Hume, Str. Feath.* i, p. 265; *Butler & Hume, ibid.* iv, p. 31; *Butler, ibid.* vii, p. 188; *Ball, ibid.* p. 233; *Hume, Cat. no.* 973; *Hume & Mar. Game-B.* iii, p. 293; *Reid, Str. Feath.* x, p. 95; *Barnes, B. of Bom.* p. 417; *Oates, Game-B.* ii, p. 413.

Description. **Adult male.**—A large patch from base of both mandibles to back of eye and including base of ear-coverts black, with green reflections; subordinate and lateral feathers of the crest the same, the black extending in a narrow line, more or less, on the sides of the head; a crescentic black band above the upper back descending down on either side of the breast; back black, duller on the lower back and changing to brown-grey on the rump and upper tail-coverts, where the feathers are dark-centred; rest of head and whole lower surface white, under aspect of tail pale grey, the feathers white-shafted except at the tips; primaries brown, dark-shafted above, white-shafted below; outer secondaries black with white tips, the next two or three white, the innermost silver-grey with dark shafts and white outer edges; greater coverts black, those over the secondaries tipped with white; median white, the remainder black; scapulars white, the outer webs edged black, giving them a barred appearance, and with a black bar across the base from the centre of the upper back, past the shoulder of the wing, and on the sides of the body; these and the flanks are white, very finely barred with black.

“Bill bluish lead-colour; nail generally brown, often paler; irides brown; legs and feet lavender-grey.” (*Blanford.*)

“Bill of a bluish lead-colour; irides bluish-white; legs and feet bluish-lead, webs darker.” (*Salvadori.*)

“In fourteen specimens I have recorded the irides as brown or deep brown in one as red-brown, and I have observed no other colour. Macgillivray records it from fresh specimens, examined by himself, as red and bright red; Naumann says that in the young it is dark brown—then nut-brown, in males of the second year brownish-grey, later light ash-grey, and in very old males a pure pearl colour or bluish-white.

“The bill is, as a rule, pale plumbeous, sometimes a clearer and bluer tint, sometimes duskier, and in some specimens, young of both sexes and old females, it has been almost black.

“The nail is generally brownish, horny whitish at the extreme tip, but in some it has been bluish-white throughout, and in some almost black throughout.



1/2

THE SMEW.
Mergus albellus

"The legs and feet vary from pale blue-grey to plumbeous and dark lavender; the webs, except just where they join the toes, being dusky to black, and the claws brownish-black. Often there is an olive tinge on the tarsi, and occasionally—in the young only, I think—both these and the toes exhibit small dusky spots and patches.

"Length 17 to 18·1 inches, wing 7·55 to 8·32, tail from vent 3·35 to 4·1, tarsus 1·2 to 1·31, bill from gape 1·63 to 1·72. Weight 1 lb. 4 ozs. to 1 lb. 12 ozs." (*Hume.*)

Female.—The black loreal patch in the male is replaced by rich dark brown, almost black in very old females; whole upper head, crest, and nape ferruginous-brown, richest and reddest at the end of the crest. Upper back grey-brown, changing to blackish-brown on the lower back and again to dark grey-brown on the rump, upper tail-coverts and tail; wings like those of the male, but the inner secondaries darker and browner, and the lesser coverts brown instead of black; breast mottled grey; rest of lower plumage white, the flanks more or less mottled with dark brown, axillaries white.

The colour of the soft parts would seem to be the same in the females as in the males, but the irides are brown.

"Length 15·5 to 16·75 inches, wing 7·01 to 7·3, tail from vent 3·3 to 3·9, tarsus 1·11 to 1·19, bill from gape 1·48 to 1·6. Weight 1 lb. to 1 lb. 6½ ozs." (*Hume.*)

Male in post-nuptial plumage assumes the plumage of the female, but appears to have the white wing-bar larger and the lesser wing-coverts darker. They also "show the two dark crescentic bands on the breast" (*Salvadori*).

"**Males in first nuptial dress** have brown streaks on the hind-neck and scapulars." (*Seebohm.*)

The young resemble the adult female, but have no dark defined loreal patch, and the crest is darker and rather duller. The white wing-patch is suffused with brown, more or less, and the breast is more spotted.

Young in down.—"Upper parts, including the sides of the head below the eye, but only the back of the neck, dark brown; below the eye a very small white spot; white spots on the posterior edge of the wing, on the sides of the back, just near the joint of the wing, the sides of the rump, and on the flanks; throat and sides of the upper part of the neck conspicuously white; crop-region dusky; flanks brown; breast and abdomen white." (*Salvadori.*)

The habitat of the Smew during the summer and breeding-season is practically the Palæarctic Region throughout Europe and Asia, whence it descends south into Southern European countries, the basin of the Mediterranean, Northern India and adjoining countries, China and Japan, and very rarely, also, it has been recorded from North America.

As regards its occurrence in India, Blanford writes:—"Within our limits the Smew is fairly common in winter in the Punjab, and is found in Sind, Northern Guzerat, the North-West Provinces, and Oudh. Jerdon records it from Cuttack, and I met with it more than once near

Ranijan in Bengal, but it has not been observed farther east nor in Southern India." To this I can add no absolutely certain record, but I think that once in 1882 I saw a flock of these birds, five of them, near Hazaribagh in Chota Nagpur. It is very unlikely that I could have made a mistake in my identification, and I have no doubt, myself, about what they were; still I failed to shoot one, so that the record is not a perfect one.

In the rivers of Assam, where I expected to find this bird comparatively common in the cold weather, I have seen only two flocks—one of four birds in Ranganadi, in Lakhimpur, and one of six birds in the extreme north-eastern reaches of the Brahmapootra. I have also had one other notification of its occurrence from the same place; and Mr. J. Needham, for many years Political Officer in Sadiya, told me he had occasionally met them, but that he had never obtained a shot at them.

I can find nothing further *re* this bird being obtained in India, beyond the fact that in the British Museum Catalogue there are three birds, "♂ ♀ ad. et ♂ juv. sk.," obtained by Falconer in Bengal. As Oates remarks, there is no reason why it should not be obtained in Northern Burmah, as it extends further east and south in China.

Even in Northern India it can nowhere be called a common bird, though there are some places to which they resort with comparative regularity, though never, it would seem, in large numbers. In Bengal it is nowhere anything but a straggler, and Cuttack would appear to be its extreme limit south.

In its northern homes the Smew generally congregates in flocks, numbering anything from a dozen or so to nearly a couple of hundred, flocks of over fifty being the exception. Here, in India, even the latter number is very exceptional indeed, and most birds are seen in comparatively small parties of a dozen to twenty. Hume mentions as few as seven, and I saw four together, but there seems to be no record of single birds or pairs having been obtained. They are as much salt as fresh water birds, though they do not seem to have been noticed on our Indian sea-coast. As might be expected of sea-haunting ducks, failing salt water, they keep almost entirely to large open rivers and lakes; but Hume notes:—"I have, in unfrequented localities, occasionally seen them on ordinary good-sized jheels, covering, perhaps, barely a square mile." They are essentially diving ducks, and, as such, naturally prefer water unencumbered by vegetation and which is of considerable depth. They are wonderfully quick, active little birds in almost every way. On the wing they are very fast and strong, though they always prefer water to air when possible; they get

up very quickly in spite of their short wings, rising lightly and at once getting into full swing. As swimmers and divers few birds can approach them, probably none can excel them. Hume gives them the reputation of being even better divers than Grebes and Cormorants, and as he watched them diving after fish, and again when diving in clear water after being slightly wounded, he ought to know. Few of us have been as fortunate as Hume in this respect, but many people have doubtless seen the Cormorants and Snake-birds being fed at the Zoo and other places, so that we can appreciate what a compliment Hume pays the Smew when he declares it to be smarter even than these.

It swims very fast indeed, and generally seeks escape by swimming and diving rather than flight, and as it is a very wide-awake and extremely shy bird it is no easy matter to get within shot. On foot, except perhaps rarely when it is found on rivers, it is almost impossible to get a shot, as they always keep well away from the shores and from vegetation, so that the sportsman has but few opportunities for stalking them. Hume, however, tells us that they may sometimes be approached in a boat by sailing past at a distance of about 40 yards; in an ordinary native boat it is no use attempting to circumvent the Smew, for he can swim and dive almost as fast, if not faster, than the boat can travel.

Like the genera *Phalacrocorax* and *Plotus*, it seems that the Smew makes use of its wings to assist it in diving, and, like these birds, it can swim at will with only its head and neck out of water, though normally it swims with its whole upper part out.

Its food is practically entirely animal, and consists of crustacea, molluscs, water-insects, larvæ, small fishes, &c. The Smew itself is quite unfit for food; even Mr. Finn, who considers that my remarks on the edible qualities of many ducks are rather unflattering, only remarks of this bird, "The flesh is said to be very bad indeed, it being, according to Pallas, *pisculentissima*."

Mr. Finn also notes ('Asian'): "It . . . gets about nimbly enough on land, where, however, it seems to be very rarely seen in a wild state. I judge from captives in the London Zoo." Other authors have given it a very bad reputation for walking powers; but it is noticeable that most ducks have been very much underrated in this respect, and Mr. Finn has set right a goodly number of antiquated mistakes on this subject.

As regards the breeding of the Smew, there is not very much on record, and what little has been recorded by various authors is with reference to eggs got from other people.

Weire says he took what he believed to be eggs of this species near Griefswald in Germany, but there was little by which he could identify them beyond the size and colour of the eggs and the fact that they were taken from a hollow tree. He did not obtain or see the parents, and though he was very likely right in his identification, they cannot be accepted as authentic without doubt.

Mr. J. Wolley, in the 'Ibis' for 1859, pp. 69-76, described at considerable length how he obtained eggs of the Smew through a certain Carl Leppajervi from Sodankyla. After trying for a long time to obtain eggs, without the slightest success, he received a small wooden box addressed "To the English gentleman Joh Woleg in Muoniovaara." In this box, amongst other things, there was the head of a female Smew and three eggs, part of a clutch of seven. These three eggs were described by Wolley as follows:—"On comparing them with a series of something like fifty Wigeon's eggs, I found they were pretty nearly of the same size, though rather below the average. They were flattened at the small end more than any of the Wigeon's, and they had less of the yellow tinge about them, so that persons not much used to eggs could pick them out of the lot; but all these peculiarities might be accidental, though it seemed remarkable that any woodsmen trying to pass off Wigeon's eggs for Smew's should have been able to find so abnormal a nest. But it was not very long before I satisfied myself that there was a decided difference of texture. This could be perceived on an ordinary examination; but it became very striking on exposing the egg to direct sunshine and examining the penumbra, or space between full light and full shadow, with a magnifying glass—the sharp 'mountainous' structure of the Wigeon's egg was strongly contrasted with the lower and more rounded character of the elevations in the Smew's. . . . Further, I tried the sense of touch: scratching the egg with the most sensitive of my finger-nails I could at once perceive the greater roughness of the Wigeon's. . . . The ivory-like texture of the Goosander's egg was a pretty parallel to the character of the Smew's."

Afterwards, Wolley received from the priest Liljeblad the other four eggs of the set, and with them the rest of the remains of the duck Smew, the head of which had been sent to him with the first three.

The dimensions of these eggs he gives as 2.04 to 2.05 inches in length and from 1.42 to 1.52 in breadth.

They are described by Wolley at great length, but briefly may be said to have been broad ovals, one end very much smaller than the other, yet decidedly obtuse.

Seebohm and Harvie-Brown obtained the eggs from the peasants in North-east Russia ; these were obtained from hollows in trees, lined thickly with the usual pale grey down.

According to Oates, "Some of these eggs brought by Mr. Seebohm from Petchora are now in the British Museum. They are nearly elliptical in shape, very smooth and glossy. They are of a pale cream-colour, and measure from 1.9 to 2.05 inches in length and from 1.42 to 1.52 in breadth.

"The Smew generally breeds in the month of July, and lays seven or eight eggs, which are placed in a hollow of a tree or in one of the boxes hung up by the villagers for the use of the Golden-eye."

Morris, in 'British Birds,' says :—"The nest of the Smew is made of dry grass, and lined with the down of the bird itself. It is placed on the ground upon the banks of lakes and rivers, not far from the water, or in the hollow of a tree.

"The eggs are said to be eight or ten, or from that to fourteen in number, and of a yellowish-white colour."

The egg, as shown by him in a plate, is a bright deep buff. One egg of this species in my collection I owe, as I do many of my rarer ducks' eggs, to the generosity of Herr Kuschel.

In general description my egg agrees very well with those obtained by Seebohm and described by Oates. It is much stained, but where the original colour shows it is an extremely pale, rather clear cream. It measures 1.95 by 1.47 inches, and was taken in Finland on the 6th June, 1895. It appears to me to have been considerably incubated at the time it was taken, so they must, sometimes at least, breed long before July, which is the month in which the greater number are said to breed. Another clutch, obtained through Skinner, St. Mary's Cray, agrees exactly with Kuschel's egg, and the dimensions come within the limits already given. These eggs were taken in Lapland in the month of June.

Genus MERGANSER.

The differences between *Merganser* and *Mergus* have already been defined, and there is no other genus found, or likely to be found, in India with which it can possibly be associated.

According to Salvadori, there are seven species in the genus, but he divides *Merganser castor* into two species, and the Indian form he designates *Merganser comatus*, and distinguishes as being "somewhat smaller, the feathers of the crest thinner, narrower, and longer; the bill usually shorter; the male has the black edges of the tertials broader, the lower back and rump paler grey and usually much freckled with white." I have had very large series of Mergansers pass through my hands now, and, as regards these differences, both forms vary *inter se* in every respect, and I cannot understand how they can be made specific, so, in this case, I have suppressed *Merganser comatus*, and think our birds should be known as *castor*, together with the European form.

No simpler key to the two Indian species can be found than Blanford's, which I give below:—

- a.* Head and upper neck black glossed with green. (Adult males.)
 - a'.* Lower parts white throughout *M. castor.*
 - b'.* Upper breast rufous with black marks *M. serrator.*
- b.* Head and upper neck rufous. (Females and non-adult males.)
 - c'.* Chin white, back grey *M. castor.*
 - d'.* Chin streaked with rufous, back brown *M. serrator.*

(44) MERGANSER CASTOR.

THE GOOSANDER.

Mergus merganser, *Hume, Cat.* no. 972; *Scully, Str. Feath.* viii, p. 364; *Hume & Mar. Game-B.* iii, p. 299; *Hume & Cripps, ibid.* xi, p. 347; *Aitken, Jour. B. N. H. S.* ii, p. 56.

Mergus castor, *Jerdon, B. I.* iii, p. 817; *Hume, Str. Feath.* i, p. 423; *Parker, ibid.* ii, p. 336; *Ball, ibid.* p. 439; *Hume, ibid.* vii, p. 149; *Ball, ibid.* p. 233.

Merganser castor, *Salvadori, Cat. B. M.* xxvii, p. 472; *Blanford, Fauna B. I.* iv, p. 469; *Oates, Game-B.* ii, p. 123; *Inglis, Jour. B. N. H. S.* xiv, p. 393.

Merganser merganser, *Oates, Game-B.* ii, p. 390.

Merganser comatus, *Salvadori, Cat. B. M.* xxvii, p. 475.

Description. **Adult male.**—Whole head, upper neck, and crest black, glossed with metallic green, showing purple in sunlight, the centre of chin and throat unglossed; lower neck and underparts white; upper back glossy black; lower back, rump, and upper tail-coverts grey, more or less vermiculated with white on the outer feathers, and the tail-coverts also with dark shafts and sometimes with paler edges; tail silvery brown, pale and more grey on the lower surface; primaries and outer secondaries very dark brown; inner secondaries white, with a narrow edging of black on the outer webs; large secondary-coverts white with black bases; primary-coverts and edge of wing black; remaining coverts white; outer scapulars white, with narrow black margins; the inner all black; one or two next the white ones tipped or with narrow, irregular white edgings.

"The bill is, according to age, a brighter or duller, lighter or deeper red, almost vermilion in some, cinnabar or deep blood-red in others. The nail and broader or narrower stripe along the culmen, from the nail to the forehead, brownish-black, dusky, or black. In some this stripe is only indicated. There is often more or less of dusky on the lower mandible, which, in some, is entirely of this colour, but in others almost orange.

"The irides, brown in the young, grow redder with age, and in old males become a deep red, with scarcely a tinge of brown.

"The legs and feet, including the webs, are bright vermilion in the old of both sexes, perhaps rather duller in the females, and reddish-orange in younger birds. The claws greyish or horny white, brownish or reddish towards their bases." (*Hume.*)

"Length about 25 inches, tail 4.25, wing 9.5, tarsus 2.0, bill from gape 2.7." (*Blanford.*)

"Wing 10.95 to 11.8 inches, tail from vent 4.80 to 5.9, culmen 1.90 to 2.10, tarsus 1.68 to 1.80." (*Salvadori.*)

"Wing 10.95 to 12.1 inches, tarsus 1.86 to 2.03, bill from gape 2.25 to 2.6. Weight 2 lbs. 12 ozs. to 3 lbs. 5 ozs." (*Hume.*)

The weights of the few males I have personally weighed, or obtained the weights of from other sportsmen, have varied between 3 lbs. and 4 lbs. 8 ozs. In both extremes the birds were specimens shot and weighed by myself.

It will be seen from the above that the wing varies from 9·5 to 12·1 inches according to different authorities ; but, though I have the measurements of some 40 males, my wing-measurements only vary between 9·6 and 11·2 inches.

Adult female.—Chin and throat white, and lores somewhat albescent ; rest of head and neck dull rufous, the crown more brown ; sides of neck and whole lower surface white, the flanks striped with grey ; primaries and first few secondaries dark brown, the next few white, the innermost grey with dark margins ; upper parts grey, rather mottled in appearance, and the upper tail-coverts with dark shafts ; tail grey-brown with darker shafts ; some of the scapulars very dark brown ; the lesser and median wing-coverts mottled grey and greyish-white.

The colour of the soft parts seems to resemble those of the male, but are, on an average, somewhat darker and more dull.

In size it is considerably smaller. Blanford gives the wing at about 9 inches, and Hume as 6·8 to 10·95 inches. The weight as being 2 lbs. or 2 lbs. 10 ozs. The wings of the females shot by myself varied between 7·5 and 10·2 inches, and the weight between 2 lbs. 6 ozs. and 3 lbs. 8 ozs. My largest females have been both bigger and heavier than many of my smaller males.

“**Young in first plumage** closely resemble adult females, but have shorter crests, and brown instead of grey markings on the breast and flanks ; males may be distinguished by paler feathers on the median wing-coverts and outer scapulars, and darker feathers on the inner scapulars.” (*Seebohm.*)

“**Males in moulting plumage** closely resemble adult females, but have traces of a black ring round the neck, are darker on the back and shoulders, and show the whitish wing of the immature bird.” (*Seebohm.*)

“**Males in first nuptial dress** have more grey on the shoulders than adults.

“**Young in down.**—Similar to that of *M. serrator*, but perhaps not so dark on the upper parts.” (*Salvadori.*)

A very young, unsexed, bird in the Indian Museum, Calcutta, has the upper parts of the head and neck dull rufous, the lower parts white, and the upper parts and tail grey ; the back very rufescent, and the wing- and tail-feathers dark-shafted.

The Goosander is found at different times throughout the whole of Europe and all Asia above the 20th degree of latitude, below which it only occurs as a straggler.

In America it is replaced by a very closely allied species.

In regard to Indian limits, Hume goes so fully into details that I cannot do better than quote him fully. He writes:—

“In the larger rivers of the Himalayas, though nowhere numerically very abundant, they are so universally distributed high up in summer,

low down in winter, that it is needless to specify the particular localities, over seventy in number, whence I have received them or where they have been reported to have been obtained.

"Outside the Himalayas I have received them, or known for certain of their having been obtained, from the Peshawar Valley, on the Cabul River; near Attock, Kalabagh, and just above Dehra Ismail Khan on the Indus; near Sealkot, on the Chenab, and smaller streams; the Kangra Valley; below Roopur on the Sutlej; Dehra Dun, not only on the Ganges from Rukikes to below Hurdwar, but in the interior; Pilibhit on the Sardeh; the Sandi Jhil, near Hardui (*Irby*); the Kosi River towards the north of the Purneah district; the Western Doars (where they appear to be extremely numerous); the Monas in the Kamrup district; some streams north of Lakhimpur; close to Sadiya; numerous localities near the bases of the Gáro and Khasi Hills on both their northern and southern faces, and well inside them; near Jamtara, about 156 miles from Calcutta on the East Indian line of railway (*Brooks*), at a large lake seven miles from Burrakur; on the Grand Trunk Road, where there were some hundreds (*Parker*); on the Damuda in Bankurah and Bardwan; in Manbhum and Dhalbhum on the Subanrika; Lohardugga (*Ball*); Singhbhum (*Chyebassa*, *Tickell*); the Rer River, Sirguja (*Ball*); the Mahanadi, near Arung (Raipur), and further down almost to Sambalpur (*Blewitt*); this latter district north of the Mahanadi (*Ball*); Palamow (*Money*); and the Sone River near Dehree-on-Sone (*E. Stewart*, *C.S.—W. Forsyth*); lastly, Ajmere, near which place Major O'Moore Creagh, V.C., shot a fine male in a large tank."

In addition to these places, in 'Stray Feathers,' vol. ii, Hume gives Sylhet and Cachar, though I have never seen or heard of them myself in either of these districts.

The next record is a most important one by E. H. Aitken, and was noted in the Journal of the Bom. Nat. Hist. Society:—"I shot a Goosander (*Mergus merganser*) at Shewa just across the Bombay Harbour on the 2nd inst. (Dec.). It was a female or immature male, and was playing along in a shallow sheet of water which formed the reservoir of one of the salt-works. I believe this is the most southern point in India from which this bird has yet been recorded."

Oates, merely because it was found in *salt water*, does not accept Mr. Aitken's identification, and thinks it must have been *M. serrator*. I can see no reason for thinking Mr. Aitken was wrong, and accept, fully,

Bombay as the most southern point in India in which the Goosander has been obtained.

The next record I can find is that of a Merganser shot by R. F. B. at Myitkyina, Burmah, and sent with a note to the 'Asian,' dated 1st March, 1897, the bird having been shot the previous day. This bird was identified by Mr. F. Finn, who kindly notified me of its occurrence.

Oates, in his 'Game-Birds,' says that "The Goosander is a common bird in the Upper Irrawaddy, and occurs in small parties of from two or three to six. Owing to my being obliged to travel about in steamers, I never succeeded in shooting one of these birds, but Commander A. C. Yorstoun kindly procured me one and sent me the skin for identification."

I have myself found it to be extremely common on the Subansiri and many other hill rivers and streams, in the cold weather, in flocks of forty upwards, and one flight I estimated at over two hundred. I should think that on the 25th, 26th, and 27th of January, 1901, I daily, in the river mentioned, saw from 200 to 500 of these birds on a very small stretch of water. They were extremely wild and wary when one came across them on the water; but when fighting would often pass up and down within shot of the boat.

As far as I can ascertain, they are equally common on the Dehing, Dibong, and all the larger streams in Assam, and are plentiful on the Brahmapootra itself above Sadiya, being also found now and then as low down as Dibrugarh, or even lower.

Primrose reports them as common and not shy on the Gadadthur in the Goalpara District, where the birds allow boats to approach within thirty yards.

The Goosander is a permanent resident in India, but during the summer is confined to the Himalayas at various heights about 10,000 feet, whence it descends in the end of October and early November to the foothills and into the plains. The limits of their local migrations have been already noted.

In most countries the Goosander is nearly as much a salt-water as a fresh-water frequenter, but here, in India, it seems to be essentially a fresh-water species, and the only record of its having been shot in the sea, within our limits, that I can find, is that of Mr. Aitken. In the Persian Gulf, however, it has been frequently obtained, and possibly closer search on our extreme north-western coast might produce more birds. It haunts the larger streams and rivers, keeping to such as have a distinct current and clear water, generally avoiding the more sluggish dirty rivers

with muddy bottoms. From what observers have noted, the Goosander likes, rather than dislikes, a rough current, and in the same way they do not appear to be at all troubled by a rough sea; thus Dresser notes meeting a flock in the sea near Guernsey, which was in water rough enough to make the steamer he was in dip its paddle-boxes alternately into the water.

Lakes and still water are not frequented when clear running rivers are adjacent, but sometimes the Goosander may be found on such, though in these cases the water will invariably be found to be free of much vegetation and fairly clean and clear.

At the same time on the Subansiri, Dehing, and Dibong I nearly always found them in the backwaters and dead pools cut off from the river. When in the actual rivers themselves they were generally in deep still pools, but I have sometimes seen them in very strong rapids, where they seemed to enjoy themselves immensely; and it is quite at home in the rough tumbling hill-streams which it frequents in its summer home, and will there be found swimming and diving at its ease with or against the roughest and quickest rapids, as well as sometimes floating idly in some deep pool.

In such places as these the Goosander may occasionally be surprised, the well-wooded banks allowing a near approach and screening the stalker until he actually arrives on the edge of the bank itself. As a rule, however, the Goosander is one of the wariest and wildest of birds, and this whether on salt or fresh water. Should he consider that danger is coming too near, his wonderful powers of swimming are at once called into action to place him out of danger; if hard pressed he resorts to diving, at which very few birds can surpass him, though he is said not to equal the Smew in this respect. It is, however, only as a last resource that he takes to wing, for, though once well up and away his flight is said to be strong and comparatively swift, he takes long to rise off the water and a long time to get properly under way. In India, as a matter of fact, I consider that the flight of the Merganser, unless he is frightened, is decidedly not swift, though when shot at he can get up a fair pace. They rise very obliquely, spattering along the top of the water some yards before clearing it, and even then going some further distance before mounting well into the air and into full flight. Their mode of starting is very similar to that of Cormorants and Divers, but once fairly started their flight is then swifter than that of either of these birds, although, as already noted, unless actually frightened it is by no means quick.

Swimming about undisturbed and with no particular object in view, they float with about one-third to half their bodies exposed, but they can sink themselves at will, and Hume says that, especially when swimming against stream, they sink very deep, as do Cormorants, and that when *wounded and pursued* they never show more than their heads and necks out of water. This is so, and I saw it repeatedly in the Subansiri and other rivers of Assam; but this mode of swimming did not seem to be resorted to unless the birds *were* wounded or frightened.

As a rule, all over their wide habitat, it is more common to meet the Goosander in quite small flocks of a dozen or so, or varying from half a dozen to a couple of dozen, whilst single birds and pairs are often seen. Sometimes, however, they go in far larger flocks. Cripps writes: "In the Western Dooars I have seen numbers of the species in flocks of from fifty to two hundred." One or two other authors have noted large flocks, but, except Cripps, all Indian observers seem to concur in considering very small flocks to be the rule in India. On the Irrawaddy, Oates speaks of meeting them in small parties numbering six or *fewer* individuals. A note sent me by Mr. S., of the Civil Service, from Darbhanga, mentions only seeing comparatively small flocks. My own experience has shown that about a dozen birds are most often found in a flock, but that they join forces during the morning and evening fighting, when flocks of forty to sixty are common, and, as I have mentioned above, sometimes as many as two hundred may be seen in one flight.

The food of the Goosander is as purely an animal diet as that of any duck in existence, and the greater portion of it consists of fish, in the diving after which it is wonderfully expert. Very often flocks work in concert in their fishing; sometimes they will gradually work the fish into some narrow inlet, and when they have got them fairly driven into it, will almost exterminate a shoal before the surviving members of it break through the living cordon of greedy birds and make good their escape.

Ball says: "In the Subanrika they may be seen in parties swimming against the stream, and all diving together apparently to catch fish. The sudden disappearance of the whole flock at the same moment gives the idea that they work in concert in hunting the fish which are coming down with the stream. Their flight is very rapid."

The same mode of fishing has been reported to me by many other observers, and has also come under my own observation on several rivers.

They are most voracious birds and do a great deal of damage in fishing rivers. Mr. E. T. Booth, in 'Rough Notes,' writes: "Goosanders are

blessed with strong, healthy appetites ; . . . when wounded or alarmed, I have occasionally remarked an immense quantity of fish was thrown up. After a shot . . . at a number of these birds . . . scores of small rudd and roach were discovered lying on the surface where the flock had been resting."

Again, to quote Mr. Finn from the 'Asian' :—"A captive bird I had under observation devoured no less than forty fish, about two inches long, at a meal. No castings were found, but bones and all were digested as by a Cormorant, and the excreta were semi-fluid and very foetid. The stomach of this bird proved to be soft throughout, not hard and muscular like a duck's gizzard." Some time after this was written, Mr. Finn was talking to me about this same Goosander, and he observed to me that the attitude of the bird on the completion of his meal was undoubtedly rather pensive, and he wore a rather strained look about his face, as if he knew he had reached the limit of his carrying capacity. Dr. Moore, of the Planters' Stores in Dibrugarh, took fourteen fish, weighing 9 ounces, from the crop of a male, and on another occasion I extracted 8 ounces of fish from a female who had, when first wounded, already thrown up some.

The cry with which the Goosander is generally credited is a croak by no means musical or soft, but Booth describes the note of the female and young as being a soft plaintive whistle.

The only note I have heard was a low guttural quack, uttered both by males and females, and by the latter, only, a low, plaintive, half hiss, half whistle. I spent several days on the Subansiri River, which I devoted entirely to obtaining specimens of the Goosander, and they undoubtedly gave me as good sport and as careful stalking as I could wish for, my best day only giving me seven birds brought to book.

Dawn found me on the river in a dug-out, and the Cormorants were then already passing in huge flights down to their feeding-grounds, but the Goosanders did not commence to flight until about half an hour after the first streaks of daylight appeared. The first flight was a small one of half a dozen birds, which passed well out of shot, but these were at once followed by a flight of nearly one hundred birds in a long line which stretched nearly half across the stream, and the nearest of these appearing to be within shot, I let drive and dropped two. One, dead, fell almost into the boat, but the other, only winged, fell with a splash a hundred yards away and at once dived. Paddling as hard as they could, the boatmen took me to the spot in a very few seconds, but as we arrived there the snake-like head of the Goosander showed from the water nearly

as far away as before. The former procedure was again carried out, and again with the same result, and nearly half an hour's chase had been kept up before I got a snap-shot at the bird as it showed above water. Although again hit it was not yet done for, but it was getting exhausted and very soon gave me a fair shot which finished it off. All this time parties of birds, small and large, had been passing down the river, but none had come within shot of the boat, the excited and gesticulating boatmen warning them off. Our bird gathered, the sun was now high and fighting had ceased, so we turned our attention to the flocks which were sunning themselves on the banks or playing in the streams or backwaters. These latter, however, we soon found to be quite unapproachable, and gave up in order to try those on the banks.

These we were more successful with, as I found that with care I could stalk them whilst their attention was taken up with the boat. My first two attempts were failures and I obtained no shot; but the third time a crawl on my stomach of over two hundred yards on the sand brought me within about forty yards, and as the flock of some thirty birds rose, I let drive both barrels and dropped seven of them. Of these, two at once rose again and joined the others, one lay kicking on the sand, and the four others were diving in all directions. Then ensued the same kind of chase that I had had after my first bird; but there were now four birds in the water, two going up stream and two down, and a hard hour's work resulted in only one capture, the others very probably leaving the water for the banks or hiding under the banks themselves.

Further stalks and further chases enabled me to bring the contents of my actual bag up to seven, but, to my regret, no less than half a dozen of my wounded birds managed to escape us altogether. They took far more hitting to bring down than most birds; and as shots within fifty yards were quite exceptional, it was not often they were brought down stone dead, and as long as they had a kick left in them they kept the boatmen hard at work.

One bird, a female, kept us employed for over half an hour without once letting the boat near enough for a shot, and then suddenly appeared floating belly upwards on the water, having died during one of her dives.

They swam under water almost as fast as the boat—a light dug-out with two boatmen—could be propelled, and as a rule they showed up in the water after each dive nearly as far off as before, until they had been chased for some ten minutes or so, when their dives began to shorten.

My experience as to their progress on land does not at all agree with

what Hume writes. He says :—"On land one sees them resting on the water's edge, and when disturbed they shuffle on their breasts into the river. I do not think that they can walk at all. Anyhow, I have always seen them just half glide, half wriggle, breast foremost, and I think touching the rocks, into the water."

I found that birds wounded and fallen on land got along wonderfully fast. A male which I winged fell on a spit of sand, scuttled across it into the water, *and again took to the land on the far side*. I ran across after it and had to run hard to catch it, and only just succeeded in grabbing it as it was about to dive into the deep pool beyond the sandbank.

When running on land they assume a very upright position, almost like that of Penguins, and they can get along at a very fair pace, though they frequently fall and tumble about when hard pressed.

Now Hume's idea may have been due to his having only seen the birds on the very edge of the water, and even tame ducks *when close to the water and on a shelving bank or stone* often seem to wriggle and glide into the water, their breasts practically touching the ground *en route*. Mr. Finn in his article on ducks, which appeared in the 'Asian,' has shown that the Mergansers can walk all right. He says :—"On shore they move about very little and are clumsy walkers, although they get about better than one would expect from the published account of their gait."

For the table the Goosander is quite worthless, and I advise no one to try it as long as *any* other food is obtainable ; the only thing to be said in its favour is, that two courses, fish and game (both nasty), may be combined in one. However, Hume says that "they are eatable if skinned, soaked several times, and then stewed with onions and Worcester sauce." He remarks that it will form then an abundant meal for a hungry man. Probably it would, or for *several* hungry men.

This Merganser undoubtedly breeds freely throughout a great portion of the higher and well-watered Himalayas from 10,000 feet upwards, but so far no one has, I believe, ever taken nests or eggs, though the young have been captured.

A very careful search through every book on the subject available in the Asiatic Society's fine library has brought to light nothing that has not been freely quoted already with regard to the nidification of this bird, so I must again make use of the previously much used remarks of Dresser, Seeborn, and others.

The Goosander breeds throughout most of Northern Europe and Asia.

Its nest has been taken frequently in the British Isles, though the bird is more common in winter than in the breeding-season ; it is found at that season throughout Denmark, Norway and Sweden, North Germany, and North and East Russia, and thence throughout North Central Asia, descending through far lower latitudes—*i. e.*, Himalayas, the Pamirs, Thibet, Persia, &c., &c.—in the west than in the east.

Normally the Goosander makes a rough nest in a hollow of a tree, lining the same very copiously with down. This tree is, as a rule, close to water or at all events within a hundred yards or so of some stream or lake, but sometimes it is placed in a tree well away from all water. Thus Mr. Booth, in 'Rough Notes,' observes :—"Throughout the districts in which I met with Goosanders during the breeding-season, the females appeared in some instances to resort to situations for nesting-purposes at a considerable elevation on the hills. A cavity in a large and partially decayed birch was pointed out by a keeper as the spot from which some eggs had been taken ; the old and weather-beaten stump was on the outskirts of a thicket of birch, fir, and elder, stretching from a swamp up a steep brae and *within a mile of a loch.*" (The italics are mine.)

Dresser, in his 'Birds of Europe,' notes :—"In Denmark it . . . remains to breed, nesting in hollow trees."

Acerbi, quoted by Yarrell, Hume, &c., &c., writes of Lapland :—"The *Mergus merganser* instead of building a small nest like the ducks . . . chooses to lay her eggs in a trunk of an old tree, in which time or the hand of man has made such an excavation as she can conveniently enter. The person that waylays the bird for her eggs places against a fir or pine tree, somewhere near the bank of a river, a decayed trunk with a hole in its middle ; the bird enters and lays her eggs in ; presently the peasant comes and takes away the eggs, leaving, however, one or two ; the bird returns, and, finding but a single egg, lays two or three more, which the man purloins in the same manner ; the bird still returns and . . . proceeds once more to complete the number she intended. She is defrauded of her eggs as before and continues the same process four or five times. As soon as the eggs are hatched, the mother takes the chicks gently in her bill and lays them down at the foot of the tree, when she teaches them the way to the river, in which they instantly swim with astonishing facility."

It also often makes use of the nest-boxes which are hung up in so many countries for the use of ducks generally, the custom being recorded from Scandinavia, Russia, Finland, North Germany, Lapland, and

Greenland. Seebohm remarks :—"The Goosander immediately avails itself of the wooden boxes which the Finns fasten up in the trees to tempt them. These boxes are made with a trap-door behind, so that the peasant may daily rob the nest, and thus make the too-confiding bird lay a score or more eggs."

Sometimes, however, the nest is made on the ground. Thus Dresser : "In Uleaborg I obtained eggs from nests on the ground, in a hollow scratched out and filled with down." Again, Dybowski, writing of its nidification in Southern Siberia, says : It nests on the ground, amongst the grass, building with dry grass and lining the interior thoroughly with down."

The bird is a very close sitter and most affectionate mother. Dr. Leverkühn writes to me :—" *Merganser castor*.—Four times I found this beautiful bird breeding in North Germany and Finland ; the nests were placed in holes in old trees, once in a public garden in the vicinity of a small town. The female bird was on the eggs and did not like to relinquish them, although we made much noise by striking with our sticks against the tree. In the end I climbed up to the hole and attempted to capture the bird with my hand, covered by a stout glove, but the bird attacked me so energetically that she made the blood run from my hand and I was forced to retire. I returned the following day with two friends and a complicated machine for taking the bird, but on our approach we were very much disappointed to find the hole empty without bird or eggs. The whole hollow was filled by a mass of downy feathers, quite sufficient to make a pillow.

"On a melancholy lake in the midst of Finland I once observed a female with thirteen chicks, who climbed about on the back, and even on the head, of their mother, probably being tired by the, as yet little used, art of swimming."

Several other observers have seen the female Goosander carrying her ducklings in this manner.

Booth notes one thing which I should not pass over. He says : "From time to time a portion of the brood turn over on their backs, remaining often in this position for several seconds." Most of us know the unhappy result if a tame duckling has the misfortune to tumble over on its back.

The eggs are said by various writers to number from six to twelve, though the birds will continue to lay on being robbed, and in such cases will lay over a score of eggs.

Yarrell describes the eggs as being of a "uniform buff-coloured white, measuring $2\frac{1}{2}$ inches in length by 1 inch and 8 lines in breadth. Six or seven young are considered a large brood; the careful mother has been seen to carry some of her offspring on her back when in the water." Dresser says that the eggs are, or are said to be by his correspondents, "warm, yellowish-white," and "rich cream or creamy-white, very smooth in texture of shell, and in size average about 2.40×1.40 inches. The down in which they are deposited is greyish-white."

Hume writes :—"The eggs are said to vary in number from seven to twelve. They are broad, regular ovals, with very fine, smooth, satiny shells of a uniform buffy-white or creamy-yellow. They vary from 2.5 to 2.9 inches in length and from 1.66 to 1.9 inches in breadth, but the average of eleven is 2.7 by 1.8 inches nearly."

I have two eggs of this species in my collection which were taken in Lapland on the 20th April, 1886, and eight others which were taken in April 1897. This seems to be about the normal time for them to commence to lay, but as the first two eggs were considerably incubated, they had probably been laid early in the month. They are found well on into June. My eggs are rather long, very regular ovals, though in all there is an appreciable difference between the two ends. The texture is extremely smooth and close, and has the satiny feel to the touch that some passerine birds' eggs have. The colour is a very pale dull buff with a decided gloss. They measure 2.75 by 1.82 inches and 2.62 by 1.72 inches in the first two and average in the second eight 2.73 by 1.84 inches.





2
5

THE RED-BREASTED MERGANSER.
Merganser serrator.

J. Green, Chromo.

(45) MERGANSER SERRATOR.

THE RED-BREASTED MERGANSER.

Mergus serrator, *Hume & Mar. Game-B.* iii, p. 305; *Hume, Str. Feath.* ix, p. 268; *Barnes, B. of Bom.* p. 416.

Mergus castor, *Hume, Str. Feath.* iv, p. 496; *Butler, ibid.* v, pp. 291, 323.

Merganser serrator, *Salvadori, Cat. B. M.* xxvii, p. 479; *Blanford, Fauna B. I.* iv, p. 470; *Oates, Game-B.* ii, p. 124; *Nurse, Jour. B. N. H. S.* xiv, p. 400; *Oates, Game-B.* ii, p. 402.

Description. **Adult male.**—Whole head, crest, and a narrow line down the nape of the neck black, the posterior part of the head and the crest glossed green; neck white; back black; lower back, rump, and upper tail-coverts white and very dark brown in fine wavy lines, the bases of the feathers on the lower back brown and showing a good deal; tail dark grey, edged paler. The primaries, three outer and innermost secondaries dark brown, the next white with black bases, and from these to the longest white with narrow black margins; greater and median coverts white; edge of the wing and smaller coverts brown; breast rather rich rufous-brown, the feathers more or less centred black; the sides of the breast under the shoulder of the wing black, with a patch of feathers white, merely margined with black; outer scapulars white, inner black.

Males.—"Length 24·0 to 26·0 inches, expanse 29·0 to 32·5, wing 9·0 to 10·0, tail from insertion of feathers 3·1 to 4·2, tarsus 1·8 to 2·05, bill at front along culmen 2·4 to 2·5. Weight (*Naumann*) a little over 2 lbs.

"In the male the bill varies from orange-red to deep vermilion, is more or less dusky on the ridge, and has the nail varying from pale yellowish-grey to almost black; the feet vary similarly to the bill, and are brighter externally, paler internally, and duller on the webs; the claws are light grey, duller, and browner or redder, towards their bases." (*Hume.*)

The above dimensions and colours of the soft parts are compiled by Hume from different authors.

Salvadori gives the total length as 21 inches, and the culmen 2·15, whilst he states the tarsus to be only 1·5.

Blanford gives the bill from gape as 2·75 inches.

Adult female.—Lores and upper part of head and neck pale rufescent-grey, with darker centres to the feathers; a faint supercilium dull rufescent-white; a dark eye-streak like the lores; chin and throat rufescent-white; remainder of head and neck dull rufous; upper parts ashy-brown, most of the feathers edged paler; lower parts white; flanks mottled brown and white; primaries and innermost secondaries dark brown; outer secondaries and their coverts white, the latter with brown bases; remainder of wing-coverts ashy-brown; under wing-coverts grey and white.

"Length 22·0 to 23·5 inches, expanse 28·0 to 31·0, wing 8·5 to 9·3, tail from insertion of feathers 2·7 to 3·6; tarsus 1·66 to 1·83, bill as above 2·1 to 2·3.

"In the young and females there is more dusky on the upper mandible, where the red is often only a lateral band, and the feet are duller coloured than in the adult male." (*Hume.*)

"**Adult male in summer.**—In the plumage that the male of this species assumes for a short time during the summer it resembles the female, but is distinguishable by its larger size, the different colour of the abdomen and of the scapulars." (*Dresser.*)

"**Young male** closely resembles the female, especially when the latter is in fresh plumage with a greyish tinge, but can usually be distinguished by its larger size and shorter crest." (*Dresser.*)

"**Males in first nuptial dress** have the lower back brown, and the white round the neck streaked with brown." (*Salvadori.*)

"**Young in down** are dark brown on the upper parts, shading into reddish-brown on the head, and into chestnut on the sides of the neck; a white patch on each wing, one on each side of the upper back, and one on each side of the rump; underparts pure white, and lores white, margined above and below with dark brown." (*Seebohm.*)

The Red-breasted Merganser is found practically throughout the Northern Hemisphere, breeding to the north, and extending south to the Mediterranean basin, Central Asia to Persia, Northern India, China and Japan, and in America to the United States.

On the whole, it is a more northern bird than the Goosander, and is circumpolar, whereas the latter is an eastern or Old-World form.

In India there is no doubt that it occurs only as the most rare of stragglers.

The first specimen quoted as being an Indian one, and which was the only one known to Hume at the time 'Game-Birds' was written, was erroneously so recorded. Blanford corrects this mistake; he says:—"The bird stated in 'Stray Feathers' and the British Museum Catalogue to have been shot by Captain Bishop at Manora, Karachi Harbour, was really obtained by him at Chahbar, in Persian Baluchistan. This correction is founded on a letter from Captain Bishop to Mr. Cumming, which I have seen."

In 'Stray Feathers' (v, p. 323), Captain (then) E. A. Butler notes:—"There is a fine specimen, a ♀, of this species in the Frere Hall Museum, shot by Captain Bishop, at the Manora Point off the Karachi Harbour; another specimen has just now been captured, at the end of June." Both these birds are referred to as *M. castor*, but the first was the *M. serrator*

obtained by Capt. Bishop at Chahbar, as already noted. Whether the second bird was *M. castor* or *M. serrator* I cannot ascertain.

Beyond this there are only three recorded instances of the actual occurrence of the Red-breasted Merganser within our limits. Of these the first was that obtained by Major Yerbury at Karachi, and which may be the second noted by Capt. Butler. The wings of this are in the British Museum.

The second Indian specimen is that in the Indian Museum, Calcutta, an unsexed specimen obtained in the Calcutta bazaar on December 17th, 1889.

Thirdly, Major Nurse records the shooting of a young male *serrator* by Captain Macnamara, at Kush-dil-Khan, about seven miles from Peshin, in the Quetta District. The skin, most unfortunately, was not preserved.

The habits of this bird vary little from those of the last, the main thing about it being the fact that it is more essentially a sea-bird. Like the Goosander, it generally associates in rather small flocks, but may occasionally be seen in parties numbering as many as two hundred or even more.

Dresser, writing of this bird, observes :—"In the Gulf of Bothnia, where the sea is fresh water, I found it extremely common in the summer season, frequenting the coasts and, less often, the inland lakes, but usually in places where the forests extended down to the shores, and frequently in localities where there are reeds or dense herbage, as is frequently the case on portions of the coast. It is a wary and shy bird, soon taking alarm, and not easy to approach within range ; but I often obtained them when out very early in the morning about sunrise, when they appeared less shy than otherwise. It is a very expert diver ; and on the coast of New Brunswick I observed them fishing in flocks at the entrance of a small bay, and evidently driving the fish before them, as they formed a sort of cordon round the entrance to the bay, some diving, whilst the others remained on the surface. When pursued or threatened with danger, it usually seeks safety by diving in preference to trusting to its powers of flight. It flies with great swiftness, and I observed, when one passed at full speed near my hiding-place in the rocks, that it made a whistling sound with its wings, easily heard even at some little distance. It feeds on fish of various kinds ; larvæ of water-insects, worms, and it is also said to some extent frogs, form its staple food."

Naumann describes their cry as "a loud, resounding, guttural *koer-rr*

or *ger-rr*," heard chiefly during flight, sometimes on rising, and the females and young are said to be more noisy than the adult males.

Like the Goosander, the Red-breasted Merganser can at will either float fairly high *on* the surface of the water, deep down *in* the water, or entirely submerge its body, leaving only its head and neck visible.

As regards its breeding-habits, it is remarkable that whereas it is the exception for the Goosander to breed building its nest on the ground, it would appear to be the rule for this bird to do so, and the exception for it to build on trees.

Saxby, describing its nesting in the Shetlands, says that, "Although they often lay amongst long grass, they seem to prefer the shelter of a roof of some kind, and thus it is that the eggs are most commonly found under rocks, in rabbit-burrows, and even in crevices in old walls."

In Yarrell's 'History of British Birds,' iii, p. 288, there are the following remarks:—"This species, Mr. Thompson says, . . . is indigenous to Iceland, nesting in islets both of marine and freshwater loughs. Pennant has recorded its breeding in the Isle of Islay. Sir W. Jardine and Mr. Selby found nests of this species when on a fishing-excursion upon Loch Awe, in Argyleshire. One of these nests was upon a small wooded island placed among thick brushwood, under the covert of a projecting rock, and completely surrounded with nettles, long grasses, and ferns. It was carefully made of moss plucked from the adjoining rocks, mixed with the down of the bird, both in structure and materials resembling that of the Eider Duck. It contained nine eggs, of a rich reddish-yellow or fawn-colour. The bird was remarkably tame, sitting until nearly taken with a small hand-net. Sir W. Jardine very kindly sent me one of these eggs for my collection; it measured $2\frac{1}{2}$ inches in length and $1\frac{3}{4}$ inches in breadth."

Dresser also says that "it usually places its nest upon the ground in quiet, unfrequented places amongst the low bushes or rank herbage; occasionally it is found in the hollow of a tree. I possess a nest, which is now before me, and which is composed of moss, fine grass-bents, and a few small pieces of twigs well felted together and mixed with down.

"The eggs, from eight to twelve in number, are usually deposited in June, or somewhat earlier than that."

He describes the eggs as being "a dull stone-drab or creamy buff, with a greenish-grey tinge, and measuring approximately from 2.55 to 2.80 inches in length and 1.70 to 1.85 in breadth."

Morris, who gives a longer note on the nidification of the Red-breasted Merganser than on most ducks, observes :—"These birds build, it seems, on the borders of, and small islands in, lakes, whether of fresh or salt water, and rivers, preferring such as have a growth of wood, the nests being placed a few yards from the edge, at the foot of the tree, or under the shelter of brushwood, in the midst of grass, fern, nettles, or other wild vegetation. Also in divers other situations, among stones in a hollow, on the bare ground, at the top of a tall tree, or in the deserted nest of some other bird, or in the end of a deep recess. It has been known, moreover, in a bleak and unsheltered situation, on an island in the sea, at some distance from the mainland. The materials of its composition are moss, flags, stalks, grass, small roots, and feathers, placed carelessly together, and intermixed with down of the bird, added to, it appears, as incubation advances.

"The eggs are from six or seven to nine, ten, or eleven in number, of a rich reddish-yellow or brownish-fawn colour. As soon as the females begin to sit, the males quit them for the season. The species appears to be late in its nidification, scarcely beginning to build before the end of May or the early part of June. The bird sits very close, and will almost allow herself to be trodden on before she will leave the nest."

With this summary of Morris's most writers agree, but the eggs are said to vary from five to fifteen in number, and many authors remark on the fact that the nest of this Merganser is, *comparatively* perhaps, unusually well put together and compact. All note the curious way the down is felted in with the rest of the materials into the body of the nest, as well as being used as a copious lining.

It should be noted that, in Holstein, Bojé found it breeding in old crows' nests.

The eggs in my collection vary in length between 2.39 and 2.65 inches, and in breadth only between 1.7 and 1.76. They are very similar to the eggs of the Goosander, but are, on the whole, rather broader ovals; all are somewhat darker in colour, and two have a well-defined greenish tint. One clutch was taken on the 29th April, 1899, and another on the 10th June, 1880, and the third 2nd July, 1898.



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